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JOURNAL *of the* AMERICAN DIETETIC ASSOCIATION

# THE DIET OF PSYCHE[1]

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TO THIS group of serious students of the science of dietetics I am afraid that my communication requires a certain apology. You may feel that I have taken advantage of your courtesy in asking me to speak, and that I have somewhat abused the opportunity. It is a good thing, however, in the midst of serious labors to take a short breathing space, although this is not the tradition of the hectic annual meetings of American national associations. A short intermission may give you time to digest the weighty papers you have already heard and prepare you to concentrate on those about to come.

My talk, therefore, has to be considered something in the nature of a dietetic intermission. It may perhaps be compared to the sherbet which indicates a certain stage of the dietetic program and enables one, with renewed zeal, to attack the later courses.

I could no doubt have served you a more nourishing and rather heavier dish, some sort of entree such as the clinical worker can prepare for almost any emergency. I might have taken as a serious text the rôle played in the genesis and treatment of disturbances of the personality by dietetic factors. The undernourished child or adult, the ill nourished individual with excess or deficit of this or that dietetic component, may not only show physical symptoms which are obvious to the eye, and complain of certain handicaps, he may also behave differently from his neighbors, his feeling of well-being may be modified, his thinking processes may be influenced. The misbehaviour of certain children has been referred to insufficient sugar in the diet; the lack of iron has been held to excuse the crankiness of many women; the pellagrous individual may show a profound disturbance in his mental proces-

[1] Read before the General Session, Annual Meeting, American Dietetic Association, Boston, October 14, 1936.

ses; the neuritis and delirium tremens of the alcoholic is closely connected with inadequacy of diet.

From the sociological standpoint inadequate diet may lead to serious social unrest, while at a certain social level cold mutton may contribute to the disruption of many a home.

The physician working in the field of nervous and mental disorders may, therefore, see numerous relationships between the problems of his patients and of the community and dietetic factors. These considerations are, of course, in general familiar to you. You are aware that not only bodily functions, but the more complex functions of the organism, the mental functions, are influenced by the quantity and quality of the food taken in.

The organism is a complex unity, some aspects of the behaviour of which are called mental while other aspects are referred to as bodily or somatic. The somatic and the psychic reactions are merely aspects of the behaviour of the unitary individual, reacting to the demands made upon him. The living body as we know it has always its psychic aspect. The mental phenomena of which we are conscious have somatic accompaniments.

For convenience we are apt to separate these two groups of phenomena and to talk as if there were two separate units with an independent existence although very closely bound together. The body is apt to be studied independently of the mind, the mind of the body.

But the body and mind, Soma and Psyche, are mere abstractions from the concrete reality of the human individual. This human individual does not live by bread alone nor even by a scientifically arranged combination of energy-giving substances of suitable composition. His welfare demands more complex nourishment.

While the maintenance of the individual organism and the chemistry of the organism may be adequately met by attention to the nature of the food supplied, the more complex functions of the organism, those functions which give to the individual his special qualities as a human being may require other sustenance than that which is sufficient to keep the power plant in action. The crude supplies which are adequate for Soma may not be sufficient for Psyche. Not only may Psyche suffer if Soma be neglected, Psyche has her own needs.

It is here that one must crave your indulgence for this intermission in your serious program; the diet of Psyche may seem to be irrelevant to the diet of her close partner Soma, which is your special field.

The mental and spiritual qualities of the individual are not to be

altogether determined by chemical considerations. They are dependent upon stimulations and resources for which no chemical equation is available. The cultural atmosphere, the influence of friends, the stimulation of reading, enrichment by means of art, the support of religion are perhaps essential to the welfare of Psyche.

Unless these elements are adequately supplied and in a suitable proportion Psyche may languish, while the physical appearance of the individual shows no sign of physical impairment nor indicates that something vital has been lost. The change in the external individual may be remarkably slight, while Psyche herself has become completely altered. Instead of being delicately responsive to the needs of others, she may have become self-centered and egoistic; instead of being keenly curious as to the structure of the outside world, her curiosity may be dead and the knowledge already acquired seem quite sufficient; instead of being able to appreciate the world as a place of beauty of various modalities, which enrich and color the life of the individual, she may have lost all appreciation of music, of painting or the plastic arts; instead of responding to the ethical quality of the universe and taking up life as a challenge which develops to the utmost all that is best in the individual, the individual may live in a world which has lost all such spiritual value, and the only values which may be recognized may be the values of individual comfort and the customary values which are measured by the world's coarse thumb.

What then are the elements of diet which Psyche requires which will enable her to maintain as robust an existence, and meet her tasks as efficiently as Soma?

For the somatic functions to work, energy must be readily available, and there must be reserves so that work can proceed smoothly and emergencies be met. Psyche too must have reserves, must have her stores always readily available; it is too late, when an emergency is met, to seek for external resources. A richly stored mind is not a question of original endowment, although native ability is important; it is the result of systematic industry, of careful utilization of time, of the utilization of opportunity.

There are those who, when not directly employed in their gainful occupation, spend their leisure time in pleasurable activities which leave no measurable gain. So long as no serious demands are made upon them they may seem to be in a healthy condition. But when serious demands are made upon them, the necessary resources are not available; habits have not been formed, knowledge is absent, a code of con-

duct is not a part of their equipment; inadequacy, inferiority, distress are the result.

The use of leisure time is therefore of the greatest moment for Psyche; all work and no play is a notoriously inadequate program, but nothing but work and play still leaves a gap. All hours apart from work need not be filled with mere recreative play. Leisure hours may be used in part for activities which build up reserves and enrich Psyche. Social activities may be purely recreative or they may also add to enrichment; they may add to our skill, they may broaden our social sympathies and insight, they may stimulate and enrich our thought. The neglected art of conversation may stimulate and enrich the mind in a way which a monotonous diet of contract bridge can never do.

The stage has played an important part in the development of modern culture, in outlining the code of the community, in challenging its attitude to important human issues. Many still find on the stage or in the film an important interest for their leisure hours. Here too the fare supplied has varied values; in some cases it is a mere distraction, giving an agreeable relaxation after strenuous endeavor; in other cases it is a stimulant, producing thrills and tensions, followed by lassitude and indifference to solid fare; there still remain nourishing and appetizing offerings which enrich one's experience and strengthen one's purpose or contribute to our philosophy of life. In your dietetic program you may have discussed the facile breakfast foods which eliminate much domestic effort. The facile film which makes no demand on mental effort is a pabulum which may weaken Psyche's digestive powers and leave her poorly equipped to put forth effort of thought in order to appreciate the products of distinguished minds.

Psyche is sometimes envious of her fellows on whom fortune has showered privileges, on those whose lot enables them to consort with choice spirits, to meet people of delicate artistic appreciation, of great erudition, of wide public experience, of extensive travel, of effervescent wit. Few have such privileges. But it is possible for us all to consort with rare spirits—so long as we have learned to read at school, and are within reach of a lending library. The rare spirits of the world are waiting for us to summon them. They are flattered when we take down from a bookshelf the permanent record of their experience, and they speak to us from the printed page. These resources are freely at our disposal; they need not be kept in a refrigerator or under special atmospheric conditions. They are in sufficient variety to meet different degrees of appetite and different tastes. One may require a robust appe-

tite to tackle Gibbon's *Decline and Fall*, but James Truslow Adams' *Epic of America* is stimulating, easily digested and nutritive. To those who lay no claim to erudition even H. G. Wells' *History of the World*, if opened anywhere at random, may please the palate, act as a tonic, contribute to the general supplies.

Psyche is by native endowment curious, in fact it was her curiosity which nearly led to her undoing and to the untimely end of her romance with Cupid. Her curiosity, however, is a quality not without value, and is entitled to satisfaction. Her eager response to the world in which she lives receives increasing encouragement. The learned have begun to take an interest in preparing food suited for her needs. Physicists, archaeologists, historians, psychologists, astronomers, vie with each other in the preparation of nutritive dishes of attractive appearance from which the more indigestible elements have been removed.

Thus Psyche need not pout because the mysteries of nature are hidden from her by the language of learned men, but may choose from among the tempting offerings so freely put at her disposal.

She may feel at times that she craves a different sort of fare, not so much insight into the impersonal structure of events as human fellowship, contact with the sensitive, the sympathetic, the humorous, the earnest. Here, too, opportunities are numerous. Through the biographies of distinguished men she can find herself in choice company, in their letters she is introduced into a very select circle, and listens to the friendly conversation of the members of this circle as they discuss all the familiar issues of human life. Lighter essays give similar personal revelations, and Psyche may feel herself all the better prepared for her more serious tasks from having communed for an hour with the whimsical soul of Charles Lamb, while if only a few minutes have been at her disposal the *Trivia* of Pearsall Smith may send her on her way rejoicing.

One may sum up one's advice with regard to the literary diet of Psyche in the words of a great English philosopher: "Some books are to be tasted, others to be swallowed, and some few to be chewed and digested; that is, some books are to be read only in parts; others to be read, but not curiously; and some few to be read with diligence and attention."

Our physical diet does not consist merely of nutrient elements but of additional factors which give it a certain bulk. There is what is called roughage. This bulky material has a certain value in regard to the physiological activities, although from the purely chemical side it is of little importance.

So, in the diet of Psyche, it may be intelligible that there is included a certain amount of material which has little nutritive value and yet which may be of use. What we read, what we see, what we do may in part be more or less neutral and be more or less the setting or the carrier of the more important activities. Thus, in the ordinary run of social contacts, in conversations and group activities, in the varied ways in which one spends one's leisure time, there may be much that is casual, routine, unproductive. It does not do to keep the bow always stretched. To be consciously attentive to the profitable employment of every minute is perhaps a dangerous attitude. In a period of bustle and constant movement and restless ambition there may be a certain value in a more care-free attitude towards life, in an attitude which indicates a certain degree of placidity and contentment and a certain confidence in the stability of this world.

Books supply to Psyche an inexhaustible store of sustenance from which she can build up her own individual reserves; they are the condensation or the distillation of the experience of countless generations. But it is not only from books that Psyche is nourished; they only supplement the more vital, if more limited, personal associations of each individual. From our friends and from our colleagues, from our teachers, from our students, from our neighbors, from their actions and their spoken words, from their sympathy and from their courage, we derive energy and direction. The personal associates of Psyche may have a marked influence on her welfare. She does well to be sensitive to their quality and to derive from each one the best of which the other is capable. Without the sensitive receptivity of Psyche to the qualities of the friend, the latent resources of the friend may remain hidden and unproductive. The choice of friends and the maintenance of friendship at its most productive level has a marked influence on the robustness and on the social value of Psyche.

Through her associations with suitable friends Psyche may rid herself of faulty habits and develop latent resources. Tastes and habits may be cultivated, delicacy of appreciation developed. Physician, nurse and dietitian are familiar with anorexia, the despair of parents, the support of pediatricians. They are familiar with the capriciousness of the young invalid, his insistence on the undesirable, his rejection of the wholesome and the nourishing. Many of you have witnessed the transformation of this capricious invalid when brought into association with a group of children who are disposing of simple and wholesome food with avidity. The appetite of the others is infectious.

So with Psyche and her anorexia, her indifference to wholesome nourishment, her craving for the exotic, the highly spiced and the stimulating. Let her associate with those who have a healthy appetite for sound mental pabulum and she finds herself accepting the same fare, devouring it with appetite, feeling herself all the stronger for it. She finds that her indulgence in the phantastic, the highly spiced, the morbid, the flashy, the superficial and the smart is a thing of the past. She realizes the truth of the French poverb: *l'appétit vient en mangeant.*

The stability, the richness, the quality of the inner life depend upon more than those resources we have already mentioned, resources which help us to deal with the material and social world in a stable and efficient way. The quality of the inner life depends on other factors. Practical efficiency, social adaptability, personal stability, are of primary importance; but to pay attention to these traits alone, to neglect the response of Psyche to beauty and to spiritual values, would be to study Psyche without her soul.

In the world of human experience beauty plays a part, and spiritual values are the supreme consideration. These are the vitamins in the diet of Psyche. In their absence Psyche fails to attain her full development, and is ill prepared to meet the emergencies of life. It is true that in their absence many tasks can still be carried on. It is possible for Psyche to deal with her experience in a matter of fact way, accomplish sufficiently her social tasks, live up to a worthy code. But this is to fall short of her full development. Psyche has the capacity of making the world of her experience not merely an orderly series of events but the occasion of experiences of beauty. This capacity may be slight or marked, it may be open to greater or less development, but it is an essential and valuable element in her endowment.

We live in the midst of a mysterious universe, and many distinguished spirits have helped to elucidate its mysteries. There are mysteries of many kinds—of mathematical relation, of physical behaviour, of chemical structure, of organic adaptation. There are other mysteries over which equally distinguished men have brooded—the quality of the sleep that is among the lonely hills, of the silence that is in the starry skies; of laughter among the daffodils; of the joy that is in the rain-bringing cloud. There are those who have striven to interpret the mystery of the universe to us through fugue, and sonata and symphony. Others have expressed the values which they found in the universe through chiselled stone, through wrought bronze, through painted wall or canvas.

In the diet of Psyche these vitamins, these vital elements must be included. Deprived of them she may show no sign of fatal weakness, may continue to display her schoolgirl complexion, may not realize that something is lacking; but she is not living up to the fullness of her endowment, and prolonged disuse of a faculty is apt to lead to atrophy.

Is any member of this Association, in this visit to Boston, content with the solid fare supplied by the program of this meeting, and does she intend to leave without a visit to the Japanese exhibition at the Museum of Fine Arts? Is anyone going to leave Boston without receiving inspiration from this unique spiritual message from the East to the West?

Of all the vitamins essential to the diet of Psyche, the most important is the spiritual vitamin. This vitamin is of importance for the daily life of Psyche. It has something of the quality of the thyroid hormone, it prevents Psyche from developing a certain coarse and pasty appearance. It makes her figure more trim, her eyes brigher, her movements more alert. With it life has more significance, its challenge is more eagerly accepted. It is, however, in the presence of emergencies, of exceptional stress and strain, that the presence of this vitamin shows its full value.

When life goes well, with abundant physical health, with success in work, with friendship, esteem, affection available, Psyche may not seem to need a cosmic outlook, a philosophy of life, a religious belief; sufficient unto the day are its tasks and its pleasures, sufficient is the limited horizon of the vocational and social program. In fair weather Psyche may feel no need of seeing her individual life on the background of the cosmic process, may not need to feel the thrill and responsibility of her own individual rôle in this process, may not need to feel that the force of this cosmic process sweeps through her own being.

Psyche, however, can hardly hope to escape all the trials of life; her partner Soma may be crippled; plans may miscarry, failure may have to be faced; fortunes are sometimes wiped out; death takes its toll of those on whom Psyche is dependent. On what resources can she depend in order to carry on courageously with her allotted task? No amount of erudition, no sensitiveness to aesthetic values will then serve her needs. The only guarantee of her facing in a healthy and courageous way her task is that her daily diet has included an adequate supply of spiritual vitamins.

Controversies have raged, still rage, will rage between the rationalist and the spiritualist ("one who regards things from a spiritual point of view"). I shall not enter into controversy. I am a psychiatrist talking to dietitians.

In the above remarks I have given you my personal impression based on long clinical experience. I have covered a rather wide field. I do not know why a psychiatrist was asked to address you. My task is to study the treatment and prevention of a certain group of disorders, to study certain principles underlying the health of the human personality. The aim of your Association is, I judge, to study certain other principles underlying the health of the human individual.

We see the same patients; we bring our results before the same public.

A dietitian with a keen interest in the human personality, with a realization of its needs, will be all the more efficient in her task. She will make a contribution to the outlook of physician, nurse and patient. She will live a fuller life. She will find herself amply repaid for taking some interest in the diet of Psyche.

# SOME ASPECTS OF THE ANEMIAS OF NUTRITIONAL DEFICIENCY[1]

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## INTRODUCTION

ANEMIA implies a decrease in the normal amount of blood. It is shown by diminution in the amount of the coloring matter of the blood, hemoglobin, or of the red blood cells which contain the hemoglobin. Often both the coloring matter and the cells are decreased. Anemia can be produced in a variety of ways. It is often dependent on defective or deficient nutrition. Anemia may arise because of a lack or non-availability for use in the body of at least three classes of dietary substances: (1) iron, (2) vitamin C, and (3) an unidentified substance (for convenience called "liver extract") contained abundantly in liver and, to a less extent, in certain other organs which, if absent, makes normal blood formation impossible and macrocytic anemias of nutritional deficiency ensue. Of these anemias with large red cells filled with hemoglobin, Addisonian pernicious anemia is the commonest example in the north temperate zone.

## ETIOLOGY

A deficiency of the material effective in pernicious anemia may be brought about in several ways and undoubtedly more than one mechanism is operative in many cases. The normal individual obtains the material from a variety of dietary sources, because by means of digestion in his stomach he can manufacture it from certain precursors which the food contains. A lack of the digestive power will result in shortage of the necessary substance, which is what happens in virtually all cases of Addisonian pernicious anemia. Thus one might say the individuals starve in the midst of plenty. A similar state can be created by a defective diet in the presence of a satisfactory digestive function. Faulty absorption from the digestive organs of the formed material also can create a deficit of "liver extract" in the body as may take place, for example, in infectious diarrhoea lasting for weeks or months. In liver, kidney, and certain other organs potent material exists preformed, and

[1] Synopsis of lecture given with 18 lantern slides at the General Session of the Diet Therapy Section, Annual Meeting, American Dietetic Association, October 13, 1936, Boston, Mass.

that is why these organs and liver extract in contrast to beefsteak, for example, are effective in the patient with pernicious anemia. Lack of secretion of the necessary digestive factor in the stomach can arise from certain deficient diets, as Miller and Rhoads have shown, and dietary deficiency can intensify the picture of faulty gastric function. The cause, however, for failure of the special gastric factor in Addisonian pernicious anemia and what rôle, if any, diet may play in producing its lack in this disease is yet to be learned.

Deficiency of vitamin C can lead to anemia and, when uncomplicated, responds to this vitamin and not to liver extract or iron.

"Iron" deficiency anemias, hypochromic in type (usually small, pale red cells deficient in hemoglobin), are particularly common in women and children because, owing to menstruation and pregnancy and during growth, the demands for iron are much greater than in adult men. Women require about four times as much iron as men up to the time of the menopause. These anemias may be dependent in part, perhaps, on some more subtle or extensive defect than deficiency of the available iron in the body. They can, however, be cured or permanently arrested by treatment with iron in proper doses although iron alone can not make hemoglobin or red blood cells. These anemias can arise because of an inadequate diet or faulty absorption of iron and are prone to develop from such causes when the demands for iron are relatively great. Improper mastication and digestive disorders may be responsible and lack of normal acid in the stomach can play a rôle in respect to faulty absorption. Loss of iron together with other blood building material is also a common cause of these anemias. This happens from blood loss, slight excess menstruation, for example, and by the unborn baby obtaining its supplies from the expectant mother. More than one of these mechanisms is apt to be operative in a given case. For example, a woman may enter pregnancy with a poor iron reserve, then partake of an inadequate diet, and experience decrease of acid in the stomach or otherwise altered digestion; these conditions, together with the presence of the unborn baby, are all likely to play a rôle in producing hypochromic anemia in pregnancy. Dietary deficiency is seldom confined strictly to one factor. The combined deficiency of "iron" and the material effective in pernicious anemia is not very rare in the same individual.

It is important to appreciate that there are factors which may inhibit nutrition and intensify a deficient state. Thus, in anemia they inhibit blood formation and hinder the action of such therapeutic agents as liver extract and iron. Such factors are infection—for example, pus in the

kidney or elsewhere—and serious damage to important organs of the body.

### DIAGNOSIS

The physician cannot, of course, adequately treat a patient until a detailed diagnosis has been made. The hasty recommendation of both liver and iron before the actual needs of the patient have been intelligently considered often may lead to the unnecessary administration of one of these substances and can make it difficult later on, when the blood is approximately normal, to determine whether or not the individual should continue with liver for the rest of his life.

Pernicious anemia should be diagnosed earlier than it usually is. Unfortunately, it is often not diagnosed until the patient has had definite symptoms for a year or more attributable to a deficiency of the material he needs. Early diagnosis depends on the individual giving the physician an opportunity to study him, and upon the doctor paying detailed attention to the patient's history and being alert to detect the disease in patients with "chronic indigestion," recurrent sore tongue, and slight signs of involvement of the spinal cord or peripheral nerves. The doctor also obtains diagnostic information by analysis of stomach contents, by microscopical and other examinations of the blood, and by testing the bone conduction sense with tuning forks.

A common error is to diagnose pernicious anemia when a patient has chronic anemia for which little can be done, due to a fundamental depressed disordered function of the organ of blood formation, namely the bone marrow. The occurrence of concomitant conditions must not cause the diagnosis of pernicious anemia or anemia associated with nutritional deficiency to be overlooked. Gallbladder disease, for example, is common in individuals with pernicious anemia; but, of course, most individuals with gallbladder disease do not have pernicious anemia.

### TREATMENT

The physician, in prescribing for anemias arising from nutritional deficiency, must realize that he is treating a patient with a generally deficient nutritional state and that the anemia is often but one symptom of the defective nutrition. The object of treatment is not only to eradicate symptoms or place them under control, but also to restore reserve supplies and the patient's nutritional state to normal for the rest of his life. The amount of material necessary to cause the anemia to vanish may be less than the amount needed to prevent the development or progress of other associated disorders, such as nerve manifestations

in pernicious anemia. With liver extract, the common error is to give too little, particularly after the blood has become approximately normal. The individual who needs liver extract almost always must take it with regularity for the rest of his life or relapse of his disease will ensue. In contrast, it is rarely necessary for iron to be taken indefinitely and never is this necessary if the causes of the anemia are corrected, which can usually be done. Each case is an individual problem. Indeed, the amount of liver extract required in macrocytic anemias of nutritional deficiency varies considerably. The variation for the optimal dose of iron is apparently less. Liver extract is at least sixty times as effective when injected than when taken by mouth. Injection of liver extract is the desirable procedure for most cases, and it gives assurance of sufficient material entering the body on selection of an appropriate dose for the given patient. There is no need for iron to be injected except, perhaps, in an extremely rare case. The use of liver extract and iron together should be judiciously decided by the physician. Treatment means still more than administering substances to offset their deficiency. Satisfaction with great improvement in the patient is not enough; he must be made as well as possible. All aspects of the case must be attended to, including the individual's manifold problems of thought and action.

Diet always needs consideration but there is no peculiar or particular diet for one or another sort of anemia. Emphasis may be placed on foods rich in blood-forming constituents but the diet for every case is an individual problem. It should be nicely adjusted with respect to all the constituents at an optimum as is proper for any person. There is no necessity for feeding large amounts of liver because the material potent for pernicious anemia can best be administered in extract form. Liver, however, is an excellent food because it contains many substances in relatively large amounts that are of fundamental importance in nutrition, including protein of good biological quality. In advising the patient what to eat, consideration must be given to the desirability for the individual to gain or lose weight, to the state of his digestive system, to his tolerance for fats and sensitivity to foods, and to all other aspects of the diet. Diet is actually more important in the prevention of anemia than in its immediate treatment.

## PREVENTION

The prevention of illness is much simpler and more desirable than successful treatment of the sick man. An optimal diet permits development of any living organism to proceed uninterruptedly and the health of the

individual to be maintained as near the optimum as possible. Nutritional defects should be detected early or when individuals begin to pass into the zone of partially deficient nutrition and thus prevent the development of disease. At present this state is usually difficult to prove but often can be suspected, particularly by a detailed study and careful evaluation of the dietary history. There is no question but that much suffering from anemia can be prevented if all persons, especially women, take an optimal diet throughout life.

Iron administration frequently can prevent the development of the common condition, hypochromic anemia of pregnancy, and thus aid to prevent anemia in the child. Since the maternal diet in pregnancy and lactation inevitably affects the well being of the infant, the health of the whole population depends to a greater or less extent on the nutrition of mothers. Anemia will also become less frequent if an attitude is taken that all toothless individuals must have properly fitted false teeth and that the diet for all patients with "chronic indigestion" should be very carefully regulated. It is of great importance to recognize the frequency with which repeated losses of menstual blood in slight excess of normal lead to anemia, as well as repeated small losses of blood from any source. Attention given early to this state of affairs will also minimize the occurrence of anemia. Indeed, early diagnosis followed by proper treatment will prevent many cases of anemia from becoming severe.

With a wider application of today's knowledge and with the development of much desirable new information about anemia and nutrition, disorders due to or associated with nutritional deficiency should diminish through the practice of prevention which is the ultimate goal of the physician and dietitian.

# THE PLACE OF THE NUTRITIONIST IN THE PUBLIC HEALTH PROGRAM[1]

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THE nutritionist has been given almost no part in the development of official public health programs in the United States. The reasons for this lack of foresight are obvious. Clear-cut, clinically defined disease entities which are produced by faulty diet do not play a significant rôle in the mortality and morbidity statistics of the United States. Beriberi, scurvy, pellagra, night blindness, nutritional edema and other readily recognized clinical conditions that are produced by food deficiencies are not encountered frequently in our medical clinics. This group of diseases have relatively little public health importance in most parts of the United States.

Thus it is not surprising that the leaders in the field of public health have been tardy in recognition of the important part that the promotion of sound nutrition must occupy in the protection of the health of the individual and the community. Only recently has it been realized that food deficiency states may not be obvious and glaringly apparent, but rather are insidious in onset and often concealed in a maze of sub-clinical, indeterminate, confusing symptomatology. We are beginning to learn, however, that the effects of malnutrition upon great numbers of our people are very real, and play an important part in production of illness and disability, retarding the development of unsuspected numbers of children and checking their full degree of physical and mental growth.

The subject requires the careful attention of public health officials because of the fact that infants and young children are the groups that are most seriously affected by nutritional deficiencies. Thus the important issue in relation to nutrition that health department executives in the United States must face, is the necessity for adequate provision of optimum food requirements for each individual in the community during the period of growth and development, and the dispersion of knowledge to the community concerning suitable utilization of proper food elements.

We are a most fortunate nation in one respect. Faulty nutrition in the United States is not due to a basic lack of essential nutritional elements, nor to faulty distribution, storage and refrigeration of food.[2]

[1] Read before the General Session, Community Education Section, American Dietetic Association, Boston, October 15, 1936.

[2] One exception to this rule is the natural iodine deficiency of a large zone in the north central states.

The essential food elements are abundant and easily procured. Poor nutrition is due, in great part, to a failure to utilize properly these readily available foods. It is true that this failure to utilize the readily available essential food elements is due in some degree to low purchasing power of a certain proportion of families in certain sections of the country.[3] By and large, however, improper nutrition is due to a lack of knowledge and understanding of the simple elementary principles of proper food requirements for the body.

This limitation of knowledge is not confined to the parents and their children. School teachers, public health nurses and health officers are often unaware of the importance of a sound nutritional regimen.

Staff members of the voluntary health and welfare agencies that are vitally interested in promoting the health of children in their various communities frequently do not realize their responsibilities or opportunities in this field. The hiatus in knowledge on the part of both those who desire to teach and aid, and those who are the recipients of this assistance, is three-fold in nature.

1. Lack of an elementary knowledge of the basic principles of normal food requirements of the body.
2. A failure to grasp the importance of the influence of proper nutrition upon normal development and optimum growth.
3. Failure to recognize nutritional deficiency when it exists.

A simple example of our lack of perspective and understanding serves to illustrate these points. We have encouraged the development of extensive programs of preventive dentistry under public health auspices. Dental clinics have been organized, dentists and full-time dental hygienists have been employed and elaborate programs for correction of dental defects have been developed. This elaborate and expensive program has been entitled "dental hygiene". In this dental hygiene program no thought has been given to the utilization of a nutritionist. Yet we must all agree that the most effective method, if not the only method that is available at the present time for actual prevention of dental caries, is through proper nutritional procedures.

Most authorities have accepted the tenant, as an established principle of government in relation to the public health, that it is the function of the official health service to act, not simply as a police agency in pro-

[3] The U. S. Department of Agriculture has estimated that one third of our population cannot afford to purchase even a minimum adequate diet. This is a highly exaggerated statement, in our opinion.

tection of the community against an invasion of infectious disease, but also to do everything in its power to promote individual and community health.

If this principle is accepted, we must, of necessity, agree that the promotion of a proper nutritional status in the individual and the community is an important governmental function.

How can this desirable condition be achieved? Is it solely a public health function? If the poor nutrition of any individual is due to the low purchasing power of the family, the matter becomes at once a public welfare function. If wholly due to lack of knowledge, and if best results are to be secured by instruction of the children, then the whole subject should be assigned to the department of education. This academic question as to proper allocation of this governmental responsibility may be discussed indefinitely, but one conclusion has already been clearly determined for us. You have often heard it stated that "experience is a dear teacher". Nevertheless, experience is one of our most effective teachers. Experience in this field has shown us that no single agency should be asked to carry the complete responsibility. Rather, a coördinated plan should be developed in which the various official and non-official agencies participate. The initiative should come from the state health department. The local health department will give leadership and direct service in the local communities, and the state should furnish advisory service and assistance to local communities.

What is the purpose of a community nutrition service? What are its aims and how may they be accomplished? What personnel should be employed and how shall the personnel be utilized to greatest advantage? What part should the nutritionist play in the organization and development of this program?

The purposes of a community nutrition service are three fold: (1) recognition of nutritional defects when they occur; (2) correction of nutritional defects when they have been discovered; and (3) promotion of normal nutrition in the community so that nutritional defects may be prevented.

## RECOGNITION OF NUTRITIONAL DEFECTS

The detection of nutritional defects may be conducted by the health department on a community-wide basis, by utilizing the same type of organization that is employed in the detection of other physical defects in the community. It is true that obvious and advanced stages of nutritional deficiency (with the one exception of defective teeth), are not com-

monly encountered in the average community. More and more, however, public health officials, school physicians, public health nurses and clinic personnel have become informed concerning the less evident, yet fairly characteristic symptom-complexes of defective nutrition, and are on the alert to detect these deficiencies during their early stages of development.

The detection of nutritional deficiencies should become the simplest part of the task. Success will depend upon the vigilance of physicians, nurses and dentists as they conduct their routine activities in the schools, the homes, and in the various clinic services of the community.

### CORRECTION OF DEFECTS

The correction of nutritional defects requires a well planned system of instruction which must be conducted on an *individual basis*. The nutritionist should plan and organize this type of instruction, but she will do little individual teaching. The major portion of this work will be assigned to public health nurses, since the public health nurse is the person who is in closest touch with home conditions and is most familiar with the family life of the community.

Some of the various activities for correction of nutritional defects that may be undertaken by the public health nurse, with the aid and guidance of the nutritionist, may be mentioned:

1. Correction of improper food habits in individual children.
2. Interviews with parent and child concerning proper food requirements to meet the needs of the malnourished child.
3. Details of arrangement of special diets for certain types of patient.
4. Instruction to mothers concerning special feeding problems of infants.
5. Individual instruction to undernourished expectant mothers and to nursing mothers.

*Community Clinical Services for Correction of Nutritional Defects.* The clinic services for correction of nutritional defects have long since become an accepted community responsibility. Hospital outpatient departments and dispensaries have organized special diet instruction clinics for special types of patient. Prenatal, well baby and child health clinics have given particular attention to problems of nutritional deficiency. The community nutritionist may be of great value to the community by aiding in the organization of such services, if they do not already exist, and may assist effectively in perfection of the technique of those nutrition clinic services that have already been established.

*Direct Aid.* Individual instruction is the paramount element in the

plan for correction of nutritional defects. The program is not completely effective, however, without the addition of another indispensable factor, namely, direct aid. Some provision must be made whereby the essential food elements may be supplied to those children in the community with nutritional defects, whose parents are so poor that they cannot provide their children with the necessities of life. This need has been met in many communities through voluntary agencies. It is an obvious responsibility of the department of public welfare. The community nutritionist may be of invaluable aid to the department of public welfare, through wise planning and guidance in relation to the necessary aid that must be given to those persons in the community who suffer from nutritional deficiencies and are in such unfortunate circumstances that they cannot provide for their own needs.

### THE PROMOTION OF NORMAL NUTRITION IN THE COMMUNITY

This is the largest task, the most difficult and the least spectacular. Those responsible for its execution must not only possess clear insight concerning the theoretical aspects of their subject and the objectives of their goal, but also have an imaginative mind and a tenacity of purpose that will surmount all obstacles. The program must be developed on a continuous and long-time basis. The results will not be immediately measurable or even demonstrable in any concrete and specific manner.

It is true that our present knowledge concerning the factors that will produce optimal conditions for normal growth and development have advanced to the point where we can be sure that if certain broad principles are followed, then certain definite results will be secured.

But human beings are not rats or guinea-pigs. We have no feasible methods whereby we can demonstrate a human nutritional experiment to the community. We cannot carry out a well controlled dietary experiment on a large number of subjects and prove to all the people that one type of diet leads to good health, another to disaster.

Progress will be slow, for the dietary habits and traditions of a people are the most resistant to change of any native quality or characteristic. The program for promotion of good nutrition is divided into two parts, community education and direct aid to the needy.

A broad educational program in the principles of a proper dietary regimen is the keystone of a sound and healthy nutritional status of the whole community. Complete success will not be secured, however, unless the educational work be supplemented, in varying degree, by

proper provision, through organized community effort, for the actual supply of necessary food elements to those in need.

*Community Education.* The educational work in nutrition may be carried out in great part through group teaching. This is in contrast to the program for correction of nutritional defects, which must be individualized. A few of the various methods of group teaching that have proved successful may be mentioned: (1) parent meetings; (2) diet demonstrations; (3) radio addresses and other types of public lectures; (4) teachers' meetings; (5) prenatal dietary instruction to special groups; (6) courses of instruction for public health nurses; (7) school-wide nutrition projects; and (8) instruction through newspapers, pamphlets, and posters. All of these various activities may be planned and organized by the community nutritionist. Much of the effective teaching will be carried out by her. For example, the school-wide projects are planned by the nutritionist in conjunction with the department of education. The materials for teaching the children, the exhibits, diet demonstrations and the like, are prepared by her for the teachers, but the actual instruction of the children is, of course, the responsibility of the individual teacher.

The community nutritionist can multiply her efforts tenfold if she adheres to the principle that she cannot devote her time to individual instruction.

Family budgeting, personal and family nutritional problems of the community are her responsibility, it is true, but this type of work is best carried out by the public health nurses that are assigned to the various districts. The nurses know the various families and are familiar with individual problems. Thus the nurse is the best person to give direct service. The nutritionist should serve as consultant to the nurses. As an instructive exercise, the nutritionist may actually go with a nurse into a home to solve some especially difficult nutritional problem. I cannot emphasize too strongly, however, that she will dissipate her energies and limit her usefulness, if her own personal activities are developed on an individualized basis.

*Direct Aid.* As we have already stated, no program for promotion of normal nutrition on a community-wide basis is complete without some provision for the actual supplementing of the diet of needy persons with the essential food elements. This need has been met effectively and spontaneously in most communities through voluntary agencies. No appeal to the generosity of mankind is greater than the wail of a hungry child. Perhaps the most serious nutritional need in the community

that has not been met effectively is the provision for proper and sufficient food for the pregnant mother who does not have the means to purchase enough food for herself and her unborn child. One effort to meet the nutritional requirements of the poor that has been carried out effectively in most communities is the school program of mid-morning supplementary milk furnished to young children through various agencies in many parts of the United States.

This supplementation of the family dietary of the poor and needy is a direct governmental responsibility which is usually assigned to the department of public welfare. There is no other activity of the community nutritionist that is of such obvious and demonstrable value to the community as the technical aid that she may give to the department of public welfare in the planning of the supplementary diets for the recipients of public aid.

## THE PLACE OF A NUTRITIONIST IN THE STATE AND LOCAL HEALTH DEPARTMENT PROGRAM

We have considered in some detail the functions of a community nutrition service and indicated the part that the nutritionist may play in organization of the program. We must recognize that, from the very nature of her work, her functions will be, in great part, educational and consultative. She will render little direct personal service. How can the nutritionist best fit into the present organization of state and local health services?

*The State Health Department* should assume the leadership in promotion of nutritional service for the community. A well qualified nutritionist should be attached to the state health department staff. She may be assigned to either the division having responsibility for local health service development, or the division of child hygiene. In one state, at least, the nutritionist is attached to the division of health education, a very logical arrangement.

The state nutritionist should be an outstanding leader in her field. Her functions are educational and advisory. She works through the local health departments and also through her colleagues on the state staff. Her major activities will include:

1. Aid to local health departments and local welfare departments also in formulation of their plans for an adequate nutritional program.
2. Preparation of popular educational material for general use throughout the state. This will include press releases, pamphlets, radio talks, material to be used for instruction in public schools, exhibits of all sorts, as well as other dignified and effective publicity.

3. Education of the state personnel and particularly the local health department personnel concerning the technique of their nutritional activities. Both group classes and individual conferences are effective methods of instruction of local health department personnel. The personnel of local voluntary agencies may well be included in these instructive exercises.

*The Local Health Program.* Every local health department should have the benefit of the advice of a trained and competent nutritionist. Here direct service is given and direct results are secured. Where possible, the nutritionist should be a full-time employee of the local health department. She should possess the necessary technical and personal qualifications so that she can carry out effective work. In addition, she should be a good teacher and should also have had social service experience. Her various duties and activities may well include the following projects:

1. Preparation of the educational material for the community at large, including talks to parent education groups, women's clubs and other organizations that are interested in public health affairs.
2. Organization of the nutrition work in the public schools, including: conferences with the teachers concerning the content of their teaching material that may relate to nutrition; education of the children through the school lunch program; mid-morning supplementary food for undernourished children; and parent conferences. (Certain school children will be found, on school medical examination, to be definitely undernourished. The nutritionist may set aside certain hours at the school for consultation with parents of those children that require special attention.)
3. Guidance of personnel. One of the major functions of the community nutritionist is the training and guidance of the local health department personnel. Most of the details of activity that are planned by the nutritionist will be carried out by the public health nurses. Thus the nutritionist should train the staff nurses in: the principles of normal nutrition; the recognition of nutritional defects when they occur; the principles of family budgeting; the requirements for special diets; prenatal food requirements; the principles of prevention of dental defects; and the methods of correction of faulty food habits. Through organized systematic courses of instruction with weekly or monthly conferences and frequent individual interviews, the staff nurse will become an effective force in promotion of the nutritional status of the community.
4. Participation in maternal hygiene and prenatal programs.
5. The dental hygiene program will perforce include nutrition work as one of its most important constituents.

*Nutrition Clinics.* Three types of nutrition clinic are frequently developed:

1. Clinics in conjunction with the general child hygiene clinics and well baby service. This plan is well suited to the "Health Center" development in some of the larger cities.
2. Clinics for special instruction of parents of malnourished children.
3. Therapeutic nutritional clinics, usually attached to and sponsored by a larger hospital or outpatient dispensary.

*Nutrition Camps.* A few official health departments sponsor summer nutrition camps. Usually, however, these camps are under the auspices of voluntary health agencies. The effectiveness of these nutrition camps can be greatly augmented if the regimen is carried out under the supervision of a competent nutritionist.

## ORGANIZATION OF A NUTRITION SERVICE

Larger municipal health departments cannot afford to be without the services of a full-time nutritionist. In general, a proper distribution of personnel requires one nutritionist for each twenty-five to thirty public health nurses; or, if considered in relation to population, one nutritionist per 100,000 inhabitants. She is of general aid to all divisions, but is most frequently attached to the division of child hygiene. In communities smaller than 100,000 two plans have been followed.

In one plan, nutritional advice and assistance have been supplied to the local health department through the state health department. The state nutritionist spends a certain proportion of her time with each of the various local health departments, guiding and assisting the local personnel in formulation of their programs.

In the second plan, some smaller communities have secured the services of a full-time nutritionist through the coöperative utilization of her services by both official and non-official agencies. The department of public welfare secures her guidance in its work relating to care of proper nutritional supervision of the indigent. Voluntary agencies utilize her services for supervision of summer camps and other nutritional activities. The department of education may share in the program, and, in some instances, the local hospital may employ her on a part-time basis to organize the therapeutic food clinics for outpatients. All the various organizations share in the cost of the nutrition work. The administrative difficulties encountered in this loosely-knit type of organization are obvious, but not insurmountable.

In one small city the local branch of the American Red Cross has taken as its responsibility the cost of supplying the city with a competent

nutritionist. This local branch does not utilize the nutritionist's services directly, but assigns her to the various organizations that require her services. This is an excellent temporary arrangement, but does not place the responsibility for the service where it belongs, namely, upon the official health and welfare agencies.

Many authorities on government believe that an ideal arrangement for smaller communities would be the allocation to a single governmental agency of all governmental functions relating to public health and public welfare under a single administrative head. Under such a plan of organization, the nutritionist would be employed as a full-time member of the department of health and welfare, and would be fully occupied in the multitude of official duties that would come within her scope in two related fields, namely, the promotion of the public health and of the public welfare. A plan of this type would have obvious advantages and should result in effective permanent work.

Many communities do not appreciate the value of a full-time, well qualified nutritionist as an integral part of the public health and public welfare service. It may be necessary, in the initiation of this type of work, for various interested voluntary organizations to try many different plans of sponsorship in development of this new type of activity.

These plans should be demonstrations only. When the nutritionist has proved her worth to the community, the responsibility for continuation of the service should be transferred to the official health and welfare departments, and the nutritionist should be given official recognition and a permanent position in the governmental organization.

# THE TREATMENT OF HYPOCHROMIC ANEMIA IN COLLEGE WOMEN[1]

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SINCE it has been shown that copper is a necessary catalyst in the formation of hemoglobin, this study was undertaken to determine whether or not hypochromic anemia of college women would respond better to iron and copper therapy than to iron alone. Realizing that copper is widely distributed in foods and that the amount required for hemoglobin production is minute, it seemed likely that the average adult diet would be adequate to furnish sufficient copper to stimulate hematopoietic action. In an effort to substantiate the assumption, this investigation was begun three years ago. Comparative studies have been made to demonstrate the effectiveness of the two types of therapy.

## LITERATURE

Sherman (1) sets a standard of 15 mg. of food iron per day as the quantitative allowance for the average adult, permitting a 50 per cent margin of safety since he considers 10 mg. to be the maintenance requirement. Other authorities feel that smaller amounts are adequate but that a deficiency may occur in women of the child-bearing age unless care is taken to furnish a well balanced diet or medicinal iron. Orr (2) states that it would be impossible to fix a limit which would be applicable to all kinds of diets, due to wide differences in availability. He found that men in Aberdeen consuming as little as 6 mg. of food iron daily showed a normal blood picture, but that women required more.

The ordinary tables of ash analyses overestimate the amount of minerals in foods. This is particularly true of iron. Elvehjem (3) has shown that hematin iron cannot be utilized effectively for building hemoglobin. Since plant and animal tissues contain varying amounts of hematin iron, the value of foods varies greatly with regard to their available iron content (4). Shackleton and McCance (5) agree that the total iron content of foods is of little use dietetically and that an analysis of the ionizable iron is of much more significance. Their results are not identical with those of Elvehjem and coworkers, but they base

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their conclusions on chemical analyses only and the Wisconsin workers have based many of theirs on feeding experiments. At least there is no doubt that all food iron is not absorbed and that this consideration is of fundamental importance when making dietary standards.

Copper is present in all living matter in varying proportions, which is an indication that it is essential for plant and animal growth. A minute amount of the element governs the activity of the iron and must be furnished in an available form. Schultze *et al.* (6) report that the copper in whole wheat is readily available and that it is quite probable that the copper in most naturally occurring food is utilizable.

Orr (2) made a dietary survey and found that the lowest copper intakes in poor families were 1.5 to 2.5 mg. daily. In non-anemic families, 2.88 mg. was the average. Chou and Adolph (7) give approximately 2 mg. as the daily copper requirement of man and state that the average mixed diet furnishes an adequate amount. It should be re-emphasized that copper does not affect the assimilation of iron in the body, but it does function in the conversion of iron into hemoglobin after it has been absorbed.

The results of a study recently reported by Duckles and Elvehjem (8) indicate that the average hemoglobin level for healthy college women is approximately 14 gm. per hundred cc. of blood and that there are both daily and hourly fluctuations which cause the value to vary from 13 to 15 gm. A hemoglobin below 13 gm. may be considered abnormal. Women are more susceptible to anemia than men. Causative factors of anemia due to iron deficiency include direct dietary deficiency, defective absorption and utilization of iron from the gastro-intestinal tract, an increased demand for iron (resulting from blood loss, pregnancy, and lactation), and infections (9).

In treating cases of hypochromic anemia, either available iron salts or foods rich in iron may be used. But the value of food iron is essentially preventative. After the iron reserve has become exhausted, it is difficult to replenish it with food alone. Inorganic iron can be administered easily, and the hemoglobin will respond in a relatively short period of time.

In adults, a store of copper is available to take care of emergencies. Sachs *et al.* (10) find that there is an inverse relation between the copper and iron content of the blood in cases of anemia, the copper being mobilized to combat the anemic condition. Sarata (11) observes that there is a greater fluctuation in blood copper in women than in men and that

there is an increase during the pre-menstrual period. Considering the reserve and the occurrence in natural foods, a copper deficiency in adulthood is considered unlikely.

A few investigators have reported on the treatment of hypochromic anemia in women, a condition which seems to be universally prevalent. Davidson *et al.* (12) found that 45 per cent of the adult women in Aberdeen were anemic. Approximately 30 per cent of the college women who were studied at this university had hemoglobins below 13 gm. per 100 cc. Widdowson and McCance (13) gave 100 mg. of iron daily in the form of ferrous ammonium citrate and produced a 10 per cent rise in hemoglobin. Witts and coworkers (14) favor the administration of massive doses of iron, stating that no maximum improvement occurs until large doses are given. They also associate the therapeutic activity of iron with its solubility and the ease with which free ferrous ions are formed. It seems more likely that it is a question of the amount of elemental iron present, rather than of ferric as compared to ferrous ions. Whipple and Robscheit-Robbins (15), in a recent report on the utilization of iron in experimental anemia, conclude that iron salts are equally efficacious if in the ferrous or ferric state. Deobald and Elvehjem (16) point out the danger of administering large amounts of iron since animal experiments have shown that excess iron interferes seriously with phosphorus assimilation.

Smaller doses of iron have been used successfully by Lintzel (17) who concludes that not more than 17 mg. are retained, even when massive doses are administered. Leverton and Roberts (18) produced a total increase of 1 gm. of hemoglobin per 100 cc. when only 5 mg. of iron from ferric ammonium citrate were given daily, but the hemoglobin dropped again when iron was stopped.

Copper is often present as an impurity in iron salts which are administered, but a few workers have added it in known quantities and have attributed satisfactory results to its supplementary effect. Adamson and Smith (19) report a hemoglobin response in some cases with iron therapy and in all cases with iron and copper therapy in the correction of chronic chlorosis. Mills (20) restores the hemoglobin of the blood to about the normal level by giving iron and copper capsules to persons with hypochromic anemia of long duration. Dameshek (21) mentions the value of small doses of copper sulphate after the anemia has become "fixed."

## EXPERIMENTATION

Students in attendance at the university served as subjects for this series of studies undertaken to determine the comparative values of iron alone, and of iron supplemented with copper, in the treatment of hypochromic anemia in adult women. The investigation was begun in the fall of 1933 and was continued until the summer of 1936. Hemoglobin determinations were made on a large number of women, and those who proved to have 2 or 3 successively low readings were included in this study. The average hemoglobin for the group before treatment was 11.4 gm. per 100 cc. of blood. In another report, we (8) have shown that the average hemoglobin for healthy non-anemic college women is approximately 14 gm. Part of the anemic women were treated with 25 mg. of iron given daily in the form of ferric pyrophosphate. An additional 1 mg. of copper from copper sulphate was administered daily to another group of about the same number of students. During the school year of 1934–35, there was also a control group of women with low hemoglobin levels who received no treatment.

Ferric pyrophosphate was used because it is known to be readily available (4). The solution of iron was prepared by dissolving 16 gm. of powdered ferric pyrophosphate in 400 cc. of distilled water containing 5 per cent alcohol. One teaspoon (5 cc.) was the daily dose and was equivalent to 25 mg. of elemental iron. The ferric pyrophosphate is easily soluble, practically tasteless, odorless, and has no great astringent properties. Due to the fact that it will not precipitate in a neutral solution, it is probably available to the body even in cases of achlorhydria. A deficient amount of hydrochloric acid in the gastric juice is frequently found to be one of the symptoms of hypochromic anemia, resulting in difficulty in absorbing iron from the ordinary diet.

For the iron and copper solution, 0.32 gm. of copper sulphate was added to the above formula. Copper sulphate has also been shown to be available (6). The solution made up in these proportions gave the equivalent of 1 mg. of elemental copper per 5 cc. The women were advised to incorporate the medicinal preparations in milk, but some of them took it with water. Three of the subjects reported slight gastro-intestinal distress following treatment, one having had slight nausea and the other two constipation.

For the hemoglobin determinations, cutaneous blood samples were taken from the finger tips. The Newcomer method was used, the color of the sample taken being compared with a carefully standardized disc in a Bausch and Lomb colorimeter.

Chart I presents 3 typical cases showing the response to iron therapy. Case 1 had 4 low hemoglobin readings before iron was administered, averaging 12.3 gm. per 100 cc. Two weeks after treatment was begun, her hemoglobin had risen to 14 gm. After 12 weeks of therapy, a maximum value of 15.4 gm. was attained. The fluctuations shown in the graph are not unusual. Daily variations from 13 to 15 gm. occur in healthy women.

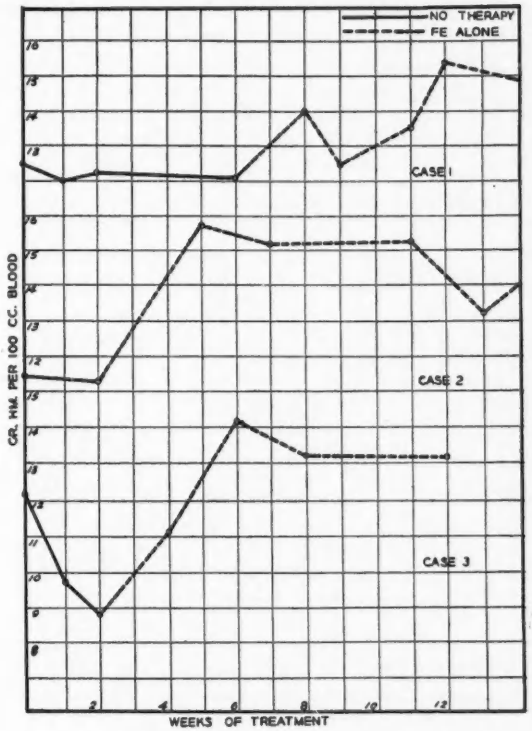


CHART I. HEMOGLOBIN CURVES FOR 3 TYPICAL CASES RECEIVING IRON ALONE

Case 2 shows a gratifying increase from 11.25 gm. to an average level of 15.42 gm. per 100 cc., which was maintained for approximately one and one-half months. At the end of this period, the iron was discontinued. During an illness, the subject's hemoglobin dropped to 13.15 gm. Upon recovery, she again responded to iron therapy, showing an increase to 14.8 gm. in 2 weeks.

The rise in hemoglobin in case 3 after iron was given represents a 5+

gm. increase in a 4 week interval. The hemoglobin in case 3 was much lower, at the beginning of treatment, than it was in most of our subjects. Twenty-five mg. of iron daily, proved to be sufficient to increase the hemoglobin to the normal level and to maintain it above 13 gm. per 100 cc.

In chart II are shown 3 typical records of anemic individuals who were treated with iron and copper. Case 6 is the most anemic one in this

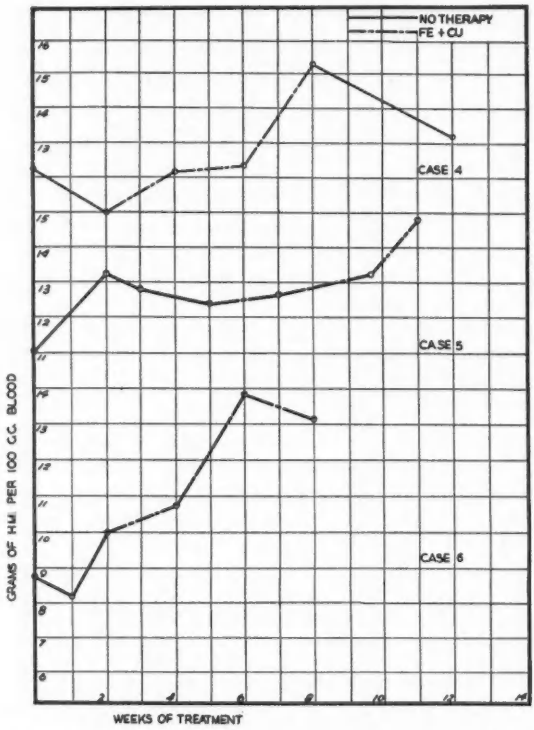


CHART II. HEMOGLOBIN CURVES FOR THREE TYPICAL CASES RECEIVING IRON AND COPPER

group and presents a picture similar to case 3 in chart I. The hemoglobin rises to 13.89 gm., and a reading 2 weeks later indicates that a high value is being maintained.

Cases 4 and 5 both respond to iron and copper therapy and reach the average hemoglobin level for normal healthy adults. However, the additional copper does not stimulate a more rapid response than does iron alone, nor is a higher level obtained.

Two of the 21 anemic women studied during the past year did not respond well to iron and copper therapy. In one case the hemoglobin averaged only 11.54 gm. per 100 cc., and in the other it averaged 12.83 gm. in spite of treatment. The first case cited was treated for 8 weeks without any appreciable increase in hemoglobin, and the second showed no progress after 14 weeks. To determine whether or not larger amounts of iron might be effective, 100 mg. were given as a daily dose to each of

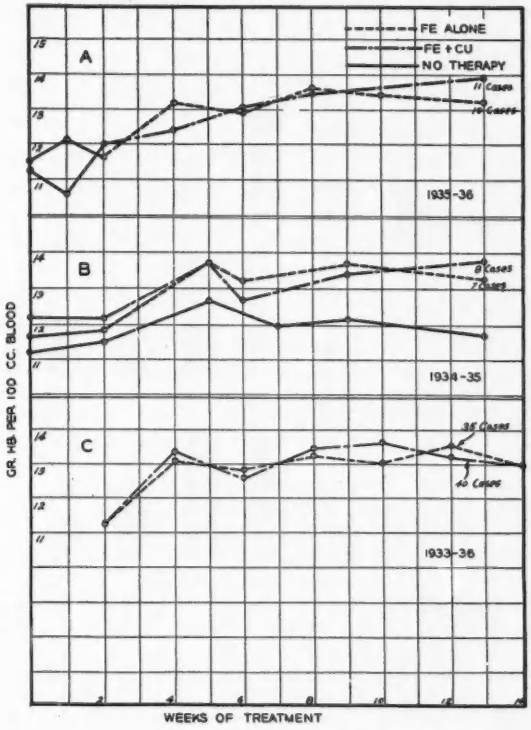


CHART III. HEMOGLOBIN CURVES CONSTRUCTED FROM THE AVERAGE FIGURES FOR A NUMBER OF SUBJECTS SHOWING COMPARATIVE EFFECT OF IRON ALONE AND IRON PLUS COPPER

the 2 women. Both of them showed a temporary slight rise in hemoglobin followed by a decline to the former level although the medication was continued.

As Minot (22) states, iron-deficiency anemias are probably not so simple as they appear. However, the results of this study show that a

satisfactory hemoglobin response can be obtained in most anemic college women by administering small doses of iron alone. Of course, in order to increase the hemoglobin to an optimum level the body should be in a good state of nutrition.

Chart III shows the response of anemic women to iron alone as compared to iron supplemented with copper. Graph A gives the average of the 21 cases studied during the past year. The extra copper does not exert any appreciable added influence. Iron alone and iron fortified

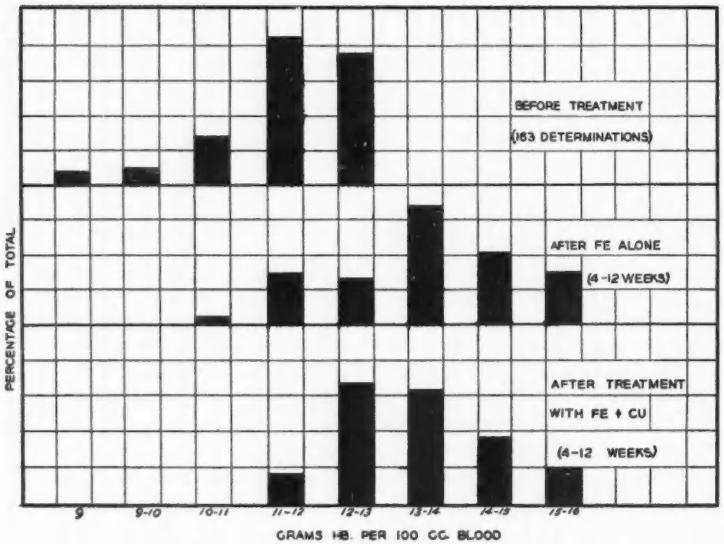


CHART IV. THE DISTRIBUTION OF THE HEMOGLOBIN VALUES FOR THE GROUP RECEIVING NO TREATMENT, THE GROUP RECEIVING IRON ALONE, AND THE GROUP RECEIVING IRON AND COPPER

with copper both increase the hemoglobin from definitely anemic levels to values within the normal range.

In graph B, there is a comparison between a control group of untreated anemic women and 15 cases who were receiving iron alone or iron plus copper. The responses to the two kinds of therapy are practically the same and are definitely higher than the curve for individuals not receiving therapy.

Graph C summarizes the results of the entire study. The hemoglobin values for the 40 women given iron and copper therapy range from 12.69

to 13.69 gm. per 100 cc., with an average of 13.23 gm. In comparison, the values for the 35 women treated with iron alone range from 12.85 to 13.49 gm., averaging 13.15 gm. The small difference denoted by these figures is negligible. There appears to be no copper deficiency in the cases studied.

Chart IV illustrates graphically the hemoglobin level of the anemic women before they were treated with iron or iron and copper, in contrast to the increased hemoglobin values attained after 4 to 12 weeks of treatment. This chart includes the cases presented in graph C on chart III and additional cases which were treated for a shorter period of time. The percentage distribution is indicated. It will be noticed that there is a definite shift to the right, or to the higher normal hemoglobin level, after the administration of either iron or iron fortified with copper. There is no consistent advantage for one kind of therapy or the other. Any individual differences are much more likely to be associated with the degree of severity of the anemia than with the type of therapy used.

## SUMMARY

1. Hypochromic anemia of college women responds as well to iron alone as to iron supplemented with copper. There seems to be no copper deficiency in the average adult diet.

2. Twenty-five mg. of iron daily is sufficient to cause the hemoglobin to increase from a definitely anemic level to the normal level.

3. While medicinal treatment of iron-deficiency anemia is necessary as a curative measure to replenish the exhausted iron reserve, an adequate diet is a preventative measure.

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# DIGESTIBILITY OF LOBSTERS, SHRIMP, AND OYSTERS[1]

SISTER JEANNE D'ARC

IN VIEW of the fact that there are many ideas and beliefs regarding the digestibility of foods, the paucity of experimental data is surprising. The variety of criteria used in judging whether a food is digestible adds to the confusion. This study was undertaken in order to determine by an *in vitro* method the relative rate and extent of digestion of the protein of certain shell fish and the effects of different methods of cooking upon their digestibility. Lobsters, shrimp and oysters were selected. The cooking methods employed were those which yield well cooked and overcooked products.

A review of other studies concerned with similar problems showed that lobster was the only shell fish included in any study (4). Fish of several types have been experimented upon by the *in vitro* and *in vivo* methods, but the studies have been inadequate. The *in vitro* studies previously reported (4, 6, 16, 19) are practically valueless because the strength of the enzymes was not properly controlled, the enzyme activity was not stopped promptly, or questionable procedures in analysis were used. Neither are the results of the *in vivo* studies (1, 7, 11, 18) of great significance because one, two, or three individuals—usually young and healthy—acted as subjects for periods of only three to six days.

The effect of cooking upon the digestibility of fish has been determined in a few studies (4, 6, 8, 16). In general these studies indicate that cooking decreases the digestibility of fish. The cooking methods were inadequately described, but were probably not such as are used for well cooked products.

## EXPERIMENTAL STUDIES

*Shell Fish Sample.* Fresh shrimp, lobsters and oysters were obtained from a Chicago wholesale market during the spring. Enough of each was prepared at one time to provide samples for the entire series. After cleaning, the whole amount was well mixed. About 300 gms. of the raw product were ground and from this the samples for digestion and drying were taken.

[1] Part of a dissertion submitted to the faculty of the Division of Biological Sciences of the University of Chicago in candidacy for the degree of doctor of philosophy. Received for publication July 5, 1936. The advice, coöperation, and interest of Dr. Evelyn G. Halliday, Dr. Lydia J. Roberts, and other members of the Department of Home Economics and Household Administration are gratefully acknowledged by the author.

*Cooking Methods.* Triplicate samples of 200 gms. of shrimp were placed in 750 cc. of boiling water and cooking continued for 12 minutes. The resulting product was well cooked and tender. To obtain an overcooked product the samples were prepared and cooked in the same manner and the period was continued for 30 minutes. After draining, the samples were ground and placed in covered glass jars in the refrigerator.

Fresh lobsters weighing approximately 2 lbs. each were used. Six of these were cooked by placing each in 3000 cc. of boiling water for 20 minutes. The meat was removed from the shell and that from two lobsters was mixed to make one sample. A portion of this was used for re-cooking. This was placed in a double-boiler and reheated at 92°C. for 10 minutes. This process was used because cooked lobster meat is frequently combined in casserole recipes which are usually cooked in a double-boiler at a temperature below the boiling point of water.

The oysters were washed and drained. Three samples of about 250 gms. each were placed in 500 cc. of water at 92°C., in a double-boiler. The cooking period was 5 minutes. To obtain overcooked products, samples were cooked in a similar way for 25 minutes.

*Digestion Apparatus.* Digestions were carried out in 100 cc. beakers placed in an electric oven containing a specially devised stirring apparatus. This consists of small paddles similar in arrangement to the dasher of an ice cream freezer. The paddles are connected to a bar which is attached to a motor on the exterior of the oven. This device provides a means of thorough mixing of samples and enzyme solutions. The continuous stirring duplicates human digestion as nearly as possible by artificial means.

*Method of Digestion.* Triplicate samples of approximately 10 gms. each were weighed into digestion beakers and placed in the digestion oven. To each sample was added sufficient tenth-normal hydrochloric acid to produce a digestion mixture having a pH of about 2, as shown by the development of a pinkish color due to the presence of thymol blue indicator. At this pH, good activity and stability of the enzyme pepsin were obtained by Northrop (12, 13). Ten cc. of 2 per cent pepsin (Fairchild Brothers', U.S.P.) solution, prepared to develop high activity as shown by McMeekin (10), were poured simultaneously into the beakers. This was accomplished by using graduated cylinders held together in a frame. The time of addition of the pepsin solution was taken as the beginning of the one hour period of digestion.

At the end of the digestion period, a 10 per cent sodium hydroxide solution sufficient to produce a faint pink color in the phenolphthalein

indicator was added. Four cc. of 3 per cent sodium carbonate and 5 cc. of 4 per cent pancreatin (Fairchild Brothers') solution were added together from the graduated cylinders. This gave a final concentration of 0.3 per cent of sodium carbonate, a value found satisfactory by Murlin (2) and Helmer (5), and a pH of about 9 at which Northrop (13, 14) reports good activity and stability of trypsin. This digestion was continued for a short period of 2 hours and a long period of 6 hours. Digestion was stopped by the addition of concentrated sulphuric acid sufficient to bring the pH to 2, with water for diluting.

Digestion mixtures were transferred to graduated centrifuge bottles and centrifuged to remove undigested matter. The clear filtrates were drawn off and analyzed.

*Amino Acid Determination.* Northrop's modification (15) for the Formol titration was adapted for this study. In this adaptation of Sörensen's procedure, small quantities of solution are used and the accuracy of the results is increased by the use of two color standards. The desirability of Northrop's method is indicated by the agreement of results obtained by this method and by Van Slyke's method in Valteich's digestions of casein (20).

*Total Soluble Nitrogen Determination.* The Koch-McMeekin micro-Kjeldahl method (9) was used for the determination of the total soluble nitrogen.

*Total Nitrogen Determination.* The total nitrogen of the food samples was determined by the modification of the Koch-McMeekin micro-Kjeldahl method developed by Chaney and Blunt (3) and a further simplification of procedure adapted for this study. The dried, weighed samples containing approximately 100 mg. of nitrogen and concentrated acid were placed in a 100 cc. Pyrex volumetric flask for the digestion. After completion of the oxidation, the digest was diluted to 100 cc. One cc. of this solution was used for Nesslerization.

*Control Digestions.* The digestion of a casein sample was run parallel to the digestion of each set of triplicate samples in order to check the relative activity of each fresh enzyme solution. The amount of digestion of the casein was determined by means of refractive indices obtained at 22°C., using a Bausch and Lomb immersion refractometer and Robertson's (17) values for the refractive indices of solutions of different amounts of casein in tenth-normal sodium hydroxide and computed change in the index produced by one gram of casein. A preliminary series in which total nitrogen and refractive indices were both determined, indicated that the method is valid.

## RESULTS OF EXPERIMENTS

*Criteria of Digestibility.* The amounts of total and amino nitrogen in soluble compounds during the short period are taken as an indication of the ease of digestion; the amounts for the long period, as an indication of the completeness of digestion.

The values for total soluble nitrogen and for amino nitrogen are shown in this study to be significant indices of digestibility, but these values may not increase proportionally, as the protein breakdown may be brought about so as to increase total soluble nitrogen more rapidly than amino nitrogen and vice versa. The conception of the action of digestive enzymes, as recently discussed and demonstrated by Willstätter and his associates and reported by Waldschmidt-Leitz (21, 22, 23), explains these results. Evidence is presented to show that the breaking up of a protein to molecules of moderate sizes, such as proteoses and peptones, is a reaction independent of subsequent cleavage to still smaller polypeptides and amino acids. It is therefore necessary to consider the amounts and increases in both amino and total nitrogen in order to present a more correct view of *in vitro* digestibility (Table 1).

*Digestibility of Lobster.* Raw lobster appears to have been more rapidly digested than the cooked when judged by the total soluble and amino nitrogen values for the short digestion. Expressed as percentage of total nitrogen, the range, in whole numbers, of soluble nitrogen for the raw is 77 to 79; for the cooked, 52 to 67. The range for amino nitrogen is 30 to 34 for the raw; for the cooked, 18 to 27.

With respect to completeness of digestion, raw and cooked lobster were about equal if judged by soluble nitrogen, since the ranges of values overlap from 68 to 85 per cent. Considering also the amino nitrogen, the raw was slightly more completely digested since 45 to 51 per cent of the nitrogen of raw samples, as compared with 30 to 38 per cent of the nitrogen of cooked samples, was in amino form after the long digestion.

Reheating lobster caused the same change in the ease of digestion as short cooking, but it brought about more complete digestion than the single cooking.

*Digestibility of Shrimp.* Raw, cooked, and overcooked shrimp were practically equal in ease of digestion on the basis of the amounts of soluble nitrogen liberated during the short digestion. Expressed as percentages of total nitrogen, the ranges of values are 52 to 68 per cent for raw and 57 to 68 per cent for cooked and overcooked. The ranges for the amino nitrogen also overlap.

TABLE 1

*Summary of percentages of nitrogen in soluble compounds formed by the action of enzymes upon shell fish**

| PREPARATION AND KIND OF SAMPLES | TOTAL NITROGEN OF SAMPLES | TOTAL SOLUBLE NITROGEN AS PER CENT OF TOTAL N | | AMINO NITROGEN AS PER CENT OF TOTAL N | |
|---|---|---|---|---|---|
| | | Digestion period | | Digestion period | |
| | | Short | Long | Short | Long |
| *Raw:* | | | | | |
| Lobster | | | | | |
| Average | 2.486 | 78.80 | 82.92 | 32.69 | 52.53 |
| Range | | 76.85–79.47 | 80.28–85.57 | 29.93–34.22 | 50.34–55.69 |
| Shrimp | | | | | |
| Average | 2.862 | 59.25 | 89.59 | 26.18 | 38.83 |
| Range | | 51.60–68.66 | 85.17–98.48 | 22.71–30.71 | 36.22–41.90 |
| Oysters | | | | | |
| Average | 0.875 | 63.74 | 82.26 | 38.90 | 43.48 |
| Range | | 60.08–71.06 | 80.09–84.78 | 34.91–45.31 | 39.93–46.79 |
| *Cooked:* | | | | | |
| Lobster | | | | | |
| Average | 2.854 | 61.18 | 75.02 | 22.06 | 32.69 |
| Range | | 52.49–66.56 | 68.13–83.07 | 18.05–27.27 | 29.26–38.45 |
| Shrimp | | | | | |
| Average | 3.874 | 64.00 | 83.64 | 19.67 | 30.47 |
| Range | | 58.28–68.41 | 76.98–90.26 | 17.12–22.54 | 27.42–37.95 |
| Oysters | | | | | |
| Average | 1.807 | 76.23 | 97.68 | 21.75 | 31.86 |
| Range | | 70.46–83.41 | 88.22–102.40 | 18.09–27.78 | 22.94–38.64 |
| *Reheated:* | | | | | |
| Lobster | | | | | |
| Average | 2.812 | 63.96 | 82.67 | 21.58 | 32.11 |
| Range | | 60.81–66.86 | 79.00–87.22 | 16.82–25.74 | 29.34–37.59 |
| *Overcooked:* | | | | | |
| Shrimp | | | | | |
| Average | 3.644 | 61.58 | 83.07 | 20.66 | 31.78 |
| Range | | 57.35–68.41 | 75.25–90.95 | 17.59–26.75 | 27.99–35.21 |
| Oysters | | | | | |
| Average | 1.892 | 85.47 | 91.76 | 25.78 | 29.65 |
| Range | | 77.27–94.75 | 86.88–98.97 | 20.71–30.96 | 26.42–34.19 |

* Averages and ranges represent triplicate determinations on triplicate samples, *i.e.*, 9 analyses for raw samples and 27 analyses for cooked and overcooked samples of each type of shell fish.

The shrimp products were all completely and about equally digested to soluble forms during the long period, judged by both the soluble and amino nitrogen values. The ranges of the percentages of soluble nitrogen are 85 to 98 for raw and 75 to 90 for cooked and overcooked; of amino nitrogen, 36 to 42 for the raw and 27 to 38 per cent for the cooked and overcooked.

Cooking for a short or long period, therefore, did not impair or improve the digestibility of shrimp.

*Digestibility of Oysters.* Cooking appeared to improve the ease of digestion of oysters if judged by the soluble nitrogen liberated during the short digestion. Expressed as percentage of total nitrogen, the ranges, in round numbers, are from 70 to 83 and 77 to 95 for the well cooked and overcooked samples, while the corresponding values for raw are 60 to 71 per cent. But the cooked samples were less easily digested if judged by the amino nitrogen, so there is some inconsistency in the results of this series.

Cooking also improved the completeness of digestion in terms of the soluble nitrogen values. From 88 to 100 per cent of the total nitrogen of these samples is in soluble compounds after the long digestion, as compared with the 80 to 85 per cent of the raw. The amino nitrogen values are not significantly higher for the long than for the short period and consequently they do not contribute information about the completeness of digestion.

Overcooking had no effect on the ease or completeness of digestion of the oysters. This was surprising in view of the fact that the overcooked samples were tough and hard, whereas the short-cooked ones were soft and tender.

*Comparative Digestibility of Shell Fish.* The values for the raw fish are contradictory, since lobster ranks first with respect to soluble nitrogen while oysters lead with respect to amino nitrogen. If the values for the raw are disregarded, however, it may be quite definitely concluded from this study that in the cooked state oysters are more quickly and more completely changed to soluble compounds than are either of the others, but all three are about equal with respect to the rapidity and completeness with which they liberate amino nitrogen.

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# EDITORIAL

## Harvard and Nutrition[1]

From Harvard's earliest days we find some interest in diet, for among John Harvard's books was a copy of "Directions for Health", giving dietary directions by Sir William Vaughn. Sanctorius, who fathered the science of the physiology of metabolism, died the year (1636) Harvard College was founded. Following him we read the names of those who shall ever be great in the annals of the science of nutrition—Lavoisier, von Voit, Rubner, Atwater and Lusk. While Harvard's interest in diet, in the ordinary sense, was far from quiescent during the 150 years when these men made their epochal observations, there were but few studies on nutrition. One of Harvard's early contributions to nutritional science was that of Bowditch, who first established the correct curve for growth of man, further studied by Porter. These, and extensive studies by Charles S. Minot on growth have a bearing on problems of nutrition. Rotch's studies, begun in 1887, gave birth to the idea of individualization and variation when he looked upon nutritional disturbance as being caused by certain elements of the diet rather than by diet as a whole. Shattuck was one of the first to recognize that the increased caloric requirements of typhoid fever patients must be met.

A new wave of interest in metabolism began about 1908, when Benedict, at the Carnegie Nutrition Laboratory, described his new unit respiration apparatus. Then followed the work of Joslin on metabolic studies of diabetes, and Talbot who formulated the energy requirements of infants and children. The metabolic studies by Means and Aub concerning endocrine disorders and the contributions of Folin to nitrogen metabolism and to the development of biochemical methods have contributed much to the understanding of nutritional problems.

Recent years have seen increasing interest at Harvard concerning some of the modern aspects of nutrition. Even so, according to Minot, "today the University has no man trained throughout . . . as a student of nutrition. There are here, however, diverse activities and potential opportunities to serve as a background for the further development of such studies which can have a far-reaching influence in many fields." Twenty-five years ago saw the dawn of our "newer knowledge of nutri-

[1] Title of address presented by the chairman, George R. Minot, M.D., at the "Symposium on Nutrition and the Deficiency Diseases" held at the Tercentenary of the Harvard Medical School, September 14, 1936, and published in the *New England Journal of Medicine*, December 17, 1936. Abstracts of other papers presented at the Symposium will appear in following issues of this Journal.

tion". Harvard has contributed much to the fundamentals of this knowledge and has directed attention toward further information to be found in the laboratory and at the bedside.

## The Present Status of Vitamin C

Scurvy, the deficiency disease resulting from lack of vitamin C in the diet, has been known for centuries. Accounts of the disease are found in records of the Crusades of the thirteenth century and subsequent history contains many references to its ravages. Repeatedly it was demonstrated that a diet of "slate food" would cause scurvy and that the addition of fresh fruits and vegetables would relieve it. Nevertheless this finding has been ignored and rediscovered many times and forms a fascinating chapter in the history of nutrition.

Fortunately, severe cases of scurvy are rarely seen today, but undoubtedly there are many cases of partial deficiency—a "subclinical scurvy" due to an insufficient amount of the vitamin. The symptoms of vague ill health, anemia, weakness, irritability, digestive disturbances and loss of appetite, with tender and aching joints, may be due in part to this cause and may easily complicate a diagnosis.

Through the isolation, identification and preparation of pure vitamin C, and the logical sequence—a satisfactory chemical method of assay—great impetus has been given to experimental study and volumes have been written regarding it in the last four years.

Since 1932 we have known vitamin C to be ascorbic acid, formerly called hexuronic and recently clinically designated as cevitamic acid. Ascorbic acid is a pure white crystalline substance readily soluble in water, sensitive to alkali, fairly stable in strong acid and a powerful reducing agent. It is this latter fact which forms the basis for the chemical test. It has the formula $C_6H_8O_6$, a sugar-like substance which exists in both the dextro and levo forms. While both are chemically active, only the levo form is active biologically.

Studies which would have been impossible by the old method of biological assay are now not only possible, but of great practical value in determining when vitamin C undernutrition is a complicating factor in disease, as well as what quantitative vitamin value may be assigned to a tissue or food.

Although it has been suggested that infants can synthesize vitamin C, proof is inconclusive and one can assume that vitamin C must constantly be supplied to man, monkeys and guinea pigs if scurvy is to be prevented. In human experiments, symptoms of subclinical scurvy have appeared after a week of a diet devoid of vitamin C. The guinea pig is definitely

scorbutic in three weeks' time. Too little attention has been paid in the past to the outlining of restricted diets. While in a normal individual on a normal diet there is no possibility of vitamin C undernutrition, on a restricted diet there may be a definite vitamin lack. We may also find deficiency resulting probably from an incomplete absorption or destruction within the body. If for any reason it is impractical to combat this condition with fresh fruits, the pure product, either "natural" or "synthetic", may be satisfactorily used.

Orange or grapefruit juice contains approximately 50 mgs. of vitamin C per 100 cc. — 1 mg. is equal to 20 vitamin C "units". Vitamin C values are now stated in milligrams rather than units. Two leading firms have made these vitamin C concentrates commercially available at a cost but little greater than the citrus fruits themselves. Citrus fruits, showing greatest constancy in vitamin content, easily prepared and universally liked, are the usual sources of vitamin C in experimental or therapeutic studies where a specific prescribed dose is desired or a minimum amount suggested. The vitamin is, of course, available in many other forms, notably raw cabbage, turnip, cooked or uncooked tomato and, to some extent at least, in all uncooked fruits and vegetables.

Most interesting and valuable studies on the vitamin C content of vegetables in relation to variety, soil in which grown, storage and methods of cooking, are being published by one of the state experiment stations.

The degree of "subclinical scurvy", or vitamin C undernutrition, may be determined in several ways. The first suggested was the capillary wall strength test, the amount of negative pressure required to produce rupture of capillary walls, as indicated by the appearance of *petechiae* (small red spots) on the skin. The value of this test is, however, a matter of dispute. It indicates lowered resistance of capillary walls in extreme vitamin C deficiency, but the interpretation of results in minor degrees of deficiency is less satisfactory.

The more satisfactory and generally used test method is the quantitative determination of the amount excreted in the urine in a 24-hour period following a known vitamin intake; and further, the rate at which the amount excreted increases each day in response to a continued large intake is an indication of the degree of saturation of the individual's tissues. Since the blood level is held between approximately 1 and 2 mgs. per cent, an excess not needed to replenish tissue stores is immediately removed from the circulating blood by the kidney and excreted in the urine. Analysis of blood and spinal fluids is likewise common procedure.

There has been some discussion regarding the specificity of the test for vitamin C—might not other reducing substances reduce the dye used in

the measurement (2-6 dichlorophenolindophenol)? We may say with fair assurance that if all the precautions indicated in the method are adhered to, one measures only vitamin C. Other reducing substances are ruled out either by the pH of the solution or the speed of the titration. The collection, storage and final analysis of material are matters requiring great care and exactness.

The possibilities of linkage between vitamin C and various disease conditions are vast. One can only enumerate a few of them. Inflammatory and degenerative conditions of the intestinal tract similar to dysentery, and conditions similar to peptic ulcer in man have been produced in scorbutic guinea pigs. The inoculation of scorbutic guinea pigs with various disease-producing organisms has been reported to result in conditions similar to typical diseases of man. Bone marrow changes and an anemia have developed on a vitamin C deficient diet, and are curable only with vitamin C therapy. Liver and iron are ineffective.

It has been suggested that vitamin C is a precursor of serum complement. There seems to be some tie-up at least between bacterial action and vitamin C. Very convincing reports are appearing regarding the beneficial effects of high vitamin C intake in tuberculosis. A possible relationship between the onset and development of eye cataract and vitamin C is being intensively studied in several laboratories.

It is unfortunate that, as with the discovery of any new therapeutic product, vitamin C is hailed as a panacea of all ills. For that reason it is of great importance to test its effectiveness under controlled conditions and obtain accurate negative as well as positive results. However, there is sufficient positive proof at hand to establish the value of vitamin C as an important health factor and to urge its liberal intake. There seems no justification for subclinical scurvy. The sources of vitamin C are many, the cost relatively small and their palatability great.

It is likewise unfortunate that in times of economic stress, fresh fruits and salad vegetables are early curtailments in meal planning. These foods are far from luxuries, they are distinct necessities.

# CURRENT COMMENT

## Vitamin C in Milk

In preparing a dietary, does milk warrant attention as a source of vitamin C? If so, does the vitamin C of the milk vary with the season or with the feed of the cow? To what extent does pasteurization alter the vitamin C?

Much recent work proves that milk is a fairly constant source of vita-

min C[1]. A value of from 20 to 25 mgs. of ascorbic acid per liter of fresh milk makes a significant contribution to the human daily requirement of 50 mgs. or more[2]. Although it has been believed that pasteurization destroyed vitamin C, it is the present concensus that the enzyme action and copper contamination are more important than heat as destructive agents. When raw milk is stored for a period of time up to three days, the vitamin C is lessened by about one-half. The oxidation of ascorbic acid is thought to be increased by an enzyme present in raw milk and in some pasteurized milk. The two types of pasteurization must be considered separately. The flash method (one-half minute at 77°C.) does not destroy the ascorbic acid but does inactivate the enzyme and thus inhibits the oxidation of vitamin C when milk is stored. The holder method (30 minutes at 62 to 63°C.) does not destroy the ascorbic acid oxidase for which reason the loss of vitamin C on storage may be as great as in raw milk. According to some authorities, this latter method may also reduce the vitamin C due to the prolonged heating.

The destruction of vitamin C due to ascorbic acid oxidase is greatly accelerated by traces of dissolved copper in as minute amounts as .13 p.p.m. The copper may come from equipment, couplings, bottling apparatus or from tin-plated copper that has become worn. It is evident that copper is less destructive in the flash-pasteurized milk because there is less enzyme present than in the raw or holder-pasteurized milk[3]. Copper activates the enzyme to such an extent that nine-tenths of the vitamin C of milk may be destroyed on standing. Two other workers have very recently challenged the undue importance given to vitamin C in milk, either raw or pasteurized[4].

Perhaps the whole problem of milk handling and storage should be reconsidered in an attempt to provide optimum retention of its nutritive properties. The method of pasteurization and the matter of copper contamination appear to be important. Sunlight is known to be undesirable to the flavor of milk and it may also be destructive to the vitamin C. The individual consumer faces the latter problem when bottled milk stands on the doorstep. English investigators offer timely infor-

[1] Sharp, Paul F.: Vitamin C in pasteurized milk, Science 83: 162, 1936.

[2] Wright, I. S.: The present status of the clinical use of cevitamic acid (ascorbic acid) (crystalline vitamin C), Am. J. Med. Sci., 192: 719, 1936.

[3] Whitnah, C. H., Riddell, W. H., and Caulfield, W. J.: The influence of storage pasteurization and contamination with metals on the stability of vitamin C in milk, J. Dairy Sci., 19: 373, 1936.

[4] Dann, W. J., and Satterfield, G. Howard: Vitamin C in pasteurized milk, Science 85: 178, 1937.

mation on the destructive action of light on the vitamin C in milk—a more complete report to be forthcoming during the current year[5].

Variations in the vitamin C content of milk due to season, individuality, breed, and stage of lactation are comparatively small[6]. A deficiency or an excess of vitamin C in the cow's ration will not appreciably alter the ascorbic acid content of the milk in any of the breeds investigated. There is no apparent correlation between vitamin C concentration and yield of milk. The ascorbic acid oxidase activity is variable, however, and this fact may account for the greater ascorbic acid loss from winter milk (dry feed) than from summer milk (pasture feed). Vitamin C of the feed is probably oxidized in the rumen of the cow, thus necessitating that the cow either synthesize her own ascorbic acid or reverse the oxidation of that already present. When large amounts of vitamin C were fed to three cows respectively, one showed a higher blood ascorbic acid and all three showed a higher urinary excretion, but the milk did not change[7].

The more extensive researches on ascorbic acid are possible today because of refinements in methods and techniques. Of the several titration procedures, the 2-6 dichlorophenolindophenol dye is the one preferred in the milk work. This quick and simple titration is replacing and may eventually supplant the much longer bio-assay method for the determination of vitamin C. According to the literature, ascorbic acid is the only reducing substance in milk that is indicated by this dye.—OREANA MERRIAM, *Massachusetts State College, Amherst.*

## A DAILY NEWSPAPER SERVICE FOR THE HOMEMAKER

A column entitled "The Winnipeg Home", a daily service feature in the *Winnipeg Tribune*, as might be surmised, embraces more than information on foods and cookery. How much more it was to include, I did not realize when I started the work a little more than a year and a half ago.

Under the column heading appear the following topics: "General Articles", dealing with foods, cookery methods, recipes, menus and menu planning, seasonable dishes and twosome cookery; and "Marketing", including a daily box at the end of the column, and a weekly market report. This last has become a most important part of the column, and I spend

[5] Kon, S. K.: The effect of light on the vitamin C of milk, Science 85: 119, 1937.

[6] Whitnah, C. H., and Riddell, W. H.: Variations in the vitamin C content of milk, J. Dairy Sci., 20: 9, 1937.

[7] Whitnah, C. H., and Riddell, W. H.: Vitamin C content of milk, J. Dairy Sci., 19: 473, 1936.

from an hour and a half to two hours daily, going from shop to shop and department to department where foods are sold, checking on prices, grades, quantities. There is no telephoning—all is personal marketing. Fresh fruits and vegetables, meats and groceries, are all included. Pricing of clothing is done at intervals, for the benefit of the budget series.

The general topic of "Health" is included occasionally in the form of articles on foods in relation to health, recipes of dishes for special diets, or foods for children. Sometimes physicians write in asking for recipes and menu suggestions for a patient.

"Budgets" as a topic was included due to requests, and interest has developed so amazingly that a weekly feature column is devoted to budgeting. Starting with a series of articles on the budgeting of home finances, including various family groups and incomes, and giving detailed suggestions for food budgeting, this weekly feature now is entirely concerned with letters received from interested family groups. Letters requesting budgets are received not only from Winnipeg and the Province of Manitoba, but also from the neighboring Provinces of Ontario, Saskatchewan and Alberta. Many of the letters are signed only with initials and frankly detail family financial difficulties. Occasionally a troubled housewife will come to see me, or talk over her problems by telephone, giving information for a desired budget. Tact, kindliness and a certain amount of sympathy are needed in responding to these requests.

Some families perform marvels on their income while others have most peculiar ideas about necessities and luxuries. One young housewife writes for a budget for an income of $50 per month for two persons, the budget to "include the running of a car for at least six months of the year". An elderly farmer of 76 years in an isolated district requests a budget of a $22 per month income for three adults (few vegetables grown in the garden) giving as his reason for wanting one: "I've been on the farm for over thirty years, and would like to get away for a little holiday, so want to budget for it". A family of seven, with an income of $93 per month, has back debts amounting to $600 to pay off. Another family with a small income has a child on a diabetic diet. A young business girl and a housekeeper both ask for clothes budgets based on $4.50 per month. No matter how seemingly hopeless the problem, I do the best I can for them, for these people are earnestly in need of help.

Correspondence varies considerably from budget problems to requests for recipes, cookery problems and questions on family menus, foods for babies, problems of feeding small children, plans for church groups, large

teas, quantity cooking, even camping supplies. Frequently a "Questions and Answers" box is included at the end of the column to handle some of the inquiries, and occasionally the whole column consists of a discussion of a letter, the problems of which might be of general interest.

In most recipes or suggestions, only locally obtainable foods or products are mentioned, since the column is primarily a service for the average housewife. I try to make my directions so clear that the inexperienced can follow them with little trouble. During the canning and pickling season, for more than two weeks the column covered only answers to inquiries on canning and preserving.

Write readably, a speaker implored at the Boston meeting, if you wish to reach a lay audience, and indeed that is one of the fundamental requirements of newspaper work. We must forego the pleasure of displaying a vocabulary of medical and dietetic terms, and use terms understandable to the layman. No matter how essential your information, if the text is not written in a style that can be easily read and understood it will be ignored. Women everywhere, both young and experienced housewives, are becoming more and more interested not only in foods and cookery, but in all subjects pertaining to the home. Patience, tact, and simple directions are required in dealing with their problems.

There is a great field for newspaper work in dietetics and home economics, and those who undertake it have an inspiring opportunity for advancing the layman's knowledge of sounder meal planning and better cookery. The work is intensely interesting, extremely varied, and offers innumerable opportunities. When the janitor of the building tells me three or four times weekly that this or that dish "was great", and others say that they "eat from 'The Winnipeg Home' ", I feel that I am at least accomplishing a part of my aim.—KATHERINE MIDDLETON,[1] *The Winnipeg Tribune, Winnipeg, Canada.*

## PROTAMINE ZINC INSULIN AND THE DIABETIC DIET

During the past year, four new insulin preparations—protamine insulin, protamine zinc insulin, protamine calcium insulin and crystalline insulin—all designed for prolonged action, have been introduced for the treatment of diabetes mellitus. Experimental work has been carried on at City of Detroit Receiving Hospital under the direction of Dr. Gordon B. Myers, professor of medicine, Wayne College of Medicine. Protamine zinc insulin has been found to be superior to the other preparations.

[1] *Editor's Note:* Miss Middleton is a 1929 graduate of the University of Manitoba, and a former student of Mary A. Foley of the Mayo Clinic.

Injections of protamine zinc insulin are made subcutaneously in the same manner as regular insulin. They do not cause any local reactions, such as soreness, redness or lumps. The amount of zinc in protamine zinc insulin is not enough to do any harm, at least no evidence of zinc poisoning has been noticed thus far.

The total daily dose required for diabetic control is about 25 per cent less for protamine zinc insulin than for regular insulin. Since the action of this new type insulin extends throughout 24 hours, it is possible to control even a severe diabetic with a single dose daily. The optimal time for giving the dosage is one to two hours before breakfast. This is quite an improvement for patients heretofore accustomed to taking three or four injections a day.

Because of the prolonged action of protamine zinc insulin, it has been possible to give more liberal amounts of carbohydrate in the diet with a greater degree of control. The trend has been toward an average of 150 to 200 grams of carbohydrate. The protein has not varied from the customary two-thirds to one and one-half grams per kilogram of body weight, and sufficient fat is given to supply the remainder of the calories.

A salient factor in the diet since protamine zinc insulin has been used is the distribution of available glucose. It has been customary to divide the available glucose in the diet into three equal parts at breakfast, dinner and supper. But protamine zinc insulin is absorbed slowly and unlike regular insulin will not offset the available glucose given at breakfast. Thus it has been found necessary to divide the available glucose over a longer period of time. In order to do this, a part of the available glucose at breakfast has been shifted to a bedtime feeding, the distribution being one-sixth at breakfast, one-third at dinner, one-third at supper, and one-sixth at a bedtime feeding. In this way we also avoid insulin reactions which occur between 3 A.M. and 7 A.M., or 20 to 24 hours after the injection.

Insulin reactions may be quite severe and prolonged and it is advisable to avoid them. However, glucose, in the form of orange juice or sugar followed by a more complex carbohydrate such as that found in bread or milk, may be given. The more complex carbohydrates require a longer time for digestion and absorption and prevent a relapse into a secondary reaction.—ELLAMARIE PEARLMAN, *Receiving Hospital, Detroit.*

# BOOK REVIEWS

**Apicius: Cookery and Dining in Imperial Rome.** By Joseph Dommers Vehling. Chicago: Walter M. Hill, 1936, pp. 301. Price $7.50, limited book-paper edition; hand-made paper (limited to 30 copies), $15.00.

Within the covers of this exquisitely bound book, dedicated to a fellow connoisseur of foods and a noted collector of culinary classics and curios—Arnold Shircliffe—we have for the first time a bibliography, critical review and translation into English of the *Apicius de re Coquinaria*. The author includes a dictionary of technical terms and many notes, views and sketches. The book is further dignified by the introduction of the anthropologist, Frederick Starr. This wealth of culinary incunabula is enlivened by the author's pen and ink drawings of many scenes and objects related to the noble art of cookery.

The arrangement follows a most scholarly procedure, and while "good paper and good print, and fine cuts, make a book become ingenious and brighten up an author strangely", in this particular instance Mr. Vehling's work speaks for itself.

The author, a Latin scholar of exceptional promise, a professional cook of pronounced success, and an artist competent to illustrate his own work, brought to his task an endowment perhaps unique. His results should elevate the gracious and fine art of cookery to its rightful place, even in this age of dietary "health consciousness".

Mr. Vehling sweeps aside Plutarch, Seneca, even Pliny, as sources of our knowledge of ancient tables; they were no gourmets, they were biased, unreliable at best, regarding culinary matters. But Horace—there's a man for you! Yet even he treated the subject of food with a sort of sovereign contempt, because "the subject *per se* was a menial one". Alas, we have his like today in this sense!

The author realizes that Apicius' work has been badly mauled throughout the centuries and therefore has not reached us in its pristine condition. Once a practical cooking book, it finally became a classical treasure—"tantalizing the scholars, amusing the curious gourmets".

The author's introduction with its illuminating views of Apicius' background (Apicius seems to have been one of three famous eaters with the name) will appeal to all students and antiquarians. One of these, M. Gabius Apicius, may have been the original dietitian, for while a much maligned bon vivant he assumed a scientific attitude toward food and took great interest in its preparation, even endowing a school for the teaching of cooking.

Mr. Vehling defends his *Apicius*. The book covers Rome's healthy epoch—not her voluptuous concoctions, fabulous dishes, or proverbial excesses. The folly of a Nero and a few other notorious wasters is spread over 800 years, but between these instances of "gastronomic insanity" lie "well nigh 1000 years of everyday grind and drudgery of the Roman people".

Mr. Vehling sees the Apician traditions alive today in the table of the Southern Europeans, even in the Northern countries—in Great Britain, Scandinavia and the Baltic provinces. Thus his principles live on, even in the dishes of today. And while the exact authorship of the *Apicius* may never be established, the document itself can be accepted as a genuine heritage of Imperial Roman days.

The author even finds in Apicius' *garum* a relationship to our own vitamin D fortified cod liver oil. And as for Apician recipes being fabulous or exaggerated, what of our bouillabaisse, fully as mysterious as any of the Apician fomulae! Even our modern sauces—Worcestershire, Escoffier's and perhaps some of those created by "culinary coryphées", appear to be lineal descendants from ancient prototypes.

While Apicius followed the correct culinary procedure of incorporating flavoring agents during the process of cooking, instead of deluging everything at the end with a commercial sauce, as we moderns, he failed

to state the quantities used. He was a cook, not a writer or an editor.

The book concludes with an Apiciana giving bibliography of Apician manuscripts and printed editions, reproductions of title pages of various editions and comments by Mr. Vehling, an index and vocabulary. It should be welcomed as a cherished addition in the library of the dietitian who is fully appreciative of the art and science of cookery.

**School Health Problems.** By Laurence B. Chenoweth, M.D., and Theodore H. Selkirk, M.D. With a chapter on School Health Administration by Richard A. Bolt, M.D., Dr.P.H. New York: F. S. Crofts and Company, 1937, pp. 387. Price $3.00.

Quoting from the preface, "The purpose of this book is to acquaint students of education, teachers in service, and others interested, with the broad general nature of health problems in schools". The authors remind us that the 18th century was termed a man's century, the 19th, a woman's, and the 20th, a child's. Before 1900, public interest in child welfare as a whole was intermittent, casual, temporary, and ineffective.

While a great deal of theoretical material on school health problems is available, much of this information is widely scattered. The authors hope, therefore, that this book, based on their practical experience as school health workers combined with a survey of current medical and educational literature, will be accepted as a practical yet scientific reference on the subject of school health. To assure the book's soundness and value, they have called upon a number of specialists for criticisms and assistance in the preparation of certain chapters.

Chapter headings include: Laws of Growth in Children; Factors Which Influence Growth (including nutrition and other extrinsic factors); Malnutrition; Physical Examination of School Children; Control of Communicable Disease; Seeing and Light; Acoustics and Hearing; Special Classes for Handicapped Children; Tuberculosis and the School Child; Mental Hygiene; Relation of Physical Education to Health; and the Accident Problem and the School. Extensive chapter references, a glossary of terms, an author and subject index, complete a book that should prove invaluable to the school physician, teacher and nurse, and the dietitian working toward improving the health of children.

**Everywoman's Complete Guide to Homemaking.** By Florence LaGanke Harris. Boston: Little, Brown, and Company, 1936, pp. 439. Price $2.50.

Mrs. Harris' introduction serves as an appetizer for her following chapters, for in it she displays a spirited sense of humor along with a real understanding of the homemaker's problems. She then proceeds to budget the homemaker's working week, details the elements of food knowledge, and follows with a meaty chapter on meal planning offering everything from menus for a stork shower to when the football boy brings the team home (we've hid in the attic for less), stag dinners and high school graduation festivities. Having trained her homemaker on such, Mrs. Harris then proceeds to show her how to cater to crowds, giving amounts and fairly explicit directions for feeding both stand-up and sit-down quantity gatherings. Her meal preparation chapter is practically a monograph of 60 pages on the subject, including directions for canning as well as storage of foods.

Household management covers work schedules, servants' uniforms and duties, and tells you how to dress your butler, morning, noon, and night. We were a bit breathless on leaving the household with a butler and two footmen, and did not fully recover until we became immersed in the directions for exterminating household pests at the end of the chapter. The section on house and home covers everything in the way of architecture and furnishings of the home, from cellar to attic.

Under children and health we find not only such subjects as habit training, clothing, food, but in addition brief discussions of the more common diseases of children (what to do until the doctor comes), safety rules and suggestions for emergency nursing. Household expenses tells you how to budget

and how to buy everything from saucepans to truffles.

Other chapters include the following: clothing and beauty, covering the matter of cosmetics, posture, dieting, home dressmaking, color harmony in dress, and clothing repair; social amenities, including forms for correspondence and suggestions for tipping; and a final chapter on leisure time activities concerning pastimes that come under the heading of what the French term "travaux aux dames". Dust cover blurbs are often overly optimistic, but it is truthfully said of this book that "it covers everything *and* the kitchen sink".

**The Boston Cooking-School Cook Book.** By Fannie Merritt Farmer. New edition, completely revised. Boston: Little, Brown, and Company, 1936, pp. 838. Price $2.50.

Published first in 1896 this famous cook book continues to be a best seller in its field, the total number of copies printed now being headed toward the two million mark. The present revision is the most extensive since the book was first published. The section on menus is entirely new, and the type throughout has been improved to aid in ready reference. Hundreds of new recipes have replaced out-moded ones. While essentially an American cook book, in the sense that it represents the best standards of our national cookery, those in charge of the present revision have shown a fine gift of discrimination in their selection of dishes of foreign extraction. The name of Miss Farmer continues to be to America what that of Mrs. Beeton is to England.

**Dietetics Simplified.** By L. Jean Bogert and Mame T. Porter. New York: The Macmillan Company, 1937, pp. 637, price $3.00.

This excellent new book is Dr. Bogert's third contribution to the rapidly growing list of reliable books on nutrition and dietetics. The book is divided into four parts: Part I, Elementary Nutrition; Part II, Diet in Normal Conditions; Part III, Diet Therapy; and Part IV (written by Miss Porter), Laboratory Lessons in Cookery.

The author has succeeded admirably in simplifying her discussion of the many-sided modern dietetic problem. In each chapter she has separated from the text, in outline form and in different type, fundamental facts, reasons, and advantages and disadvantages of various procedures, or other important points to be remembered. These outlines stand out conspicuously and should attract the attention of the reader and assist him in getting the maximum value from the text. Good judgment has been used in the selection of pictures, graphs and other illustrations.

Part II has been very well presented, especially the chapters dealing with menu building, adequate diets for normal adults, and how to put family dietaries together. There is considerable repetition of statements of nutrition needs and how to meet them. However, in the author's skilful hands, this repetition merely adds needed emphasis and in no way lessens one's sustained interest in her discussion.

Part III wisely follows the modern dietetic practice of treating special diets as simple modifications of the normal diet. The modifications discussed are in terms of food energy, consistency and flavor, residue, amounts of protein, fat or carbohydrate, nucleoprotein, amounts of different minerals (calcium, phosphorus, iron, iodine, sodium chloride), amounts of different vitamins, water intake, and acid-base relations. Food allergy is also discussed. In each chapter are listed the various special physiological abnormalities requiring the dietary modification in question, the diseases in which these abnormalities are found, and how to adapt the normal diet to the needs of the patient.

Part IV is divided into two sections. Fifteen lessons in the preparation of foods for the general diet are followed by fifteen suggested laboratory projects in the special diet field.

The appendix gives extensive tables showing the nutritive values of many common foods, tables of weights and measures, and tables of average weights for different heights and ages of preschool children, school children and adults.

In the preface the authors state their be-

lief "that a simply written yet thoroughly scientific text on Dietetics would be of service in Home Economics courses, to hospital dietitians, to nurses and medical students. In addition, such a book should be welcomed by physicians who desire to educate their patients along dietary lines, and by intelligent housewives who are anxious to understand how to cope with the feeding problems of families". The reviewer expresses the hope that the book will obtain this wide use and also be of value to nutritionists, public health nurses and social workers interested in improving the health of the general public. —MARTHA KOEHNE, *Nutritionist, Bureau of Child Hygiene, Department of Health, Columbus, Ohio.*

**The Country Kitchen.** By Della T. Lutes. Boston: Little, Brown, and Company, 1936, pp. 264. Price $1.75.

Mrs. Lutes spent her entire childhood and youth in the farming communities of Southern Michigan, thereby storing up a fund of homely knowledge which is reflected in the mellow charm of her book. It is a complete portrayal of life on the farm before the advent of the Model T, including even a chapter on the omnipresent little runt pig, the lights and shades of whose existence are known to every dirt farmer's child. The pig Little Runt, the dog Shep, the horses Star and Baldy and even the borrowing Covells are living, breathing characters by no means indigenous to the territory of Southern Michigan, the book's locale.

The author thoughtfully includes an index of the several delectable recipes that are well larded into the text. Her method of preparing mashed potatoes, for those unfamiliar with this vanishing art, alone is worth the price of the book. The "salt-risin'" bread, the chicken pie, made with no alien or distracting elements, the box social and the ladies' aid, lavishly entertained with the help of the ample and efficient Miz' Bauldry, are but a few of the appetizing elements. The literary style, likewise, is a delight to the senses: "And into the kettles, timed to the hour of need, went the potatoes, the onions for creaming, and the Hubbard squash for steaming." For warmth of spirit and portrayal of the rural character, with his pungent humor and shrewd powers of observation, few books can surpass this.

**Dietetics for the Clinician.** By Milton Arlanden Bridges, B.S., M.D., F.A.C.P. Philadelphia: Lea & Febiger, 3rd ed., 1937, pp. 1055. Price $10.00.

This book has had a remarkable success, having appeared in three editions since 1933. The first edition was reviewed in this JOURNAL for November 1933, the second, in May 1935.

This edition includes analyses of raw products and a new classification of foods covering the mineral, nutritive and vitamin values in their edible state. The dietary treatments of more than 200 diseases are included, with 300 diets and 900 menus. The sections on pediatrics and on vitamins have been completely rewritten and revised, and the appendix now includes 200 pages of tables, which summarize the analyses of common foods, including nationally known commercial products.

The author has continued to bespeak the aid of well-known authorities for assistance in the preparation of certain chapters. In his preface, Dr. Bridges states: "Since the author is fully aware of the inability of physicians to incorporate diet principles in the form of proper and palatable menus, this book has been prepared with aid from the Dietary Department of the New York Post-Graduate Hospital".

**Institutional Tested Recipes.** By Samuel Pfeiffer and Etta M. H. Hackett. 2d. ed. Chicago: Patterson Publishing Company, 1936, pp. 195. Price $2.50.

A collection of recipes arranged in amounts to serve fifty, prepared by the supervisor and assistant supervisor of the Buffalo School Cafeterias, and cercla-bound for convenience in use. Rules for eliminating waste, planning menus, and various helpful tables are included.

**You Needn't Have a Cold.** By Hugo Jahn, Boston: Bruce Humphries, Inc., 1936, pamphlet, pp. 31. Price 25 cents.

Presents the author's personal views on diet and the prevention of colds.

**Annual Report of the Surgen General of the Public Health Service.** Washington: Government Printing Office, Document No. 3081, 1936, pp. 158. Price 20 cents (cloth).

The report covers the divisions of scientific research, including nutrition, domestic and foreign quarantine, marine hospitals and relief, sanitary reports and statistics, venereal diseases and mental hygiene. There were 31 dietitians on duty in the Public Health Service July 1, 1936, the same number as on July 1, 1935.

# CURRENT LITERATURE

## American Journal of Digestive Diseases and Nutrition

*Vol. 3, December, 1936*

*Vitamin deficiency in prescription diets of diabetics. A. Sindani.—p. 759.
*Vitamin B complex therapy in chronic arthritis. C. L. Steinberg.—p. 765.
*The spastic colon diet. E. E. Cornwall—p. 773.
*Beriberi due to a reducing diet. M. Snyder.—p. 789.

DIETS OF DIABETICS. Diets consisting of a variety of natural foodstuffs such as vegetables, fruits, milk and its products, meat and cereals in the prescribed proportions, with hygienic measures such as sunshine, fresh air and exercise, will furnish an ample supply of vitamins for persons suffering from diabetes. The diabetic patients studied in this investigation were placed on a high carbohydrate diet of between 100–180 gm. per day, protein 60–80 gm., and fat 80–120 gm. Vitamin D milk was recommended but no other vitamin concentrates or "diabetic foods" were considered advisable.

VITAMIN B IN CHRONIC ARTHRITIS. In a study of 118 cases of chronic arthritis of which 99 had gastrointestinal symptoms, it was found that the vitamin B complex is of adjunct value in the treatment of chronic arthritis.

THE SPASTIC COLON DIET. Three spastic colon diets are outlined. Bananas, cereal gruels, milk, orange juice, strained milk soups and toast make up the bulk of the diets. When a more liberal diet is tolerated, chicken or fish may be added.

BERIBERI DUE TO A REDUCING DIET. A young man exhibited generalized edema and weakness following an inadequate diet consisting of grapefruit and meat with a little lettuce once or twice a week. Laboratory tests were entirely normal. The complete disappearance of the edema and general symptoms, after a course of treatment consisting of the administration of vitamin B and an adequate diet, is proof that the condition was a deficiency disease, a B avitaminosis or "wet" beriberi.

## American Journal of Nursing

*Vol. 37, January, 1937*

*Food in relation to the eyes. P. Lewis.—p. 43.

FOOD IN RELATION TO THE EYES. The absence or excess of necessary elements in the diet may cause profound functional changes in the eyes which may later become organic. In the advanced stages of pernicious anemia, changes in the retina are not uncommon. Similar changes occur in diabetes, causing cataract and retinal inflammation and seriously affecting the sight. Night blindness, a condition due to the lack of vitamin A, is prevalent in the children of India and China. The degenerative processes of age, including the loss of sight, may be retarded by a generous diet containing the right kinds of foods such as meats, fresh vegetables, eggs and dairy products.

## American Journal of Public Health

*Vol. 26, December, 1936*

*Epidemiology and symptomatology of staphylococcus food poisoning: A report of recent outbreaks. G. A. Denison.—p. 1168.
Bacterial limitations in ground fresh meat. W. C. Elford—p. 1204.
Bacterial examination of glassware or china for sanitary quality. C. R. Fellers, A. S. Levine and E. W. Harvey.—p. 1211.

*Vol. 27, January, 1937*

*Rodent control in food establishments. R. Moore.—p. 62.

FOOD POISONING. One hundred twenty-two cases of food poisoning due to staphylococcus aureus and B. coli communis in cream puffs are reported and discussed. The cream puffs appeared fresh enough but the filling had been allowed to stand for two and one-half hours in a bakery with many unsanitary features, before being placed in the shells.

RODENT CONTROL. Bubonic plague, endemic typhus, spirochetal jaundice, rat-bite fever and food poisoning caused by infection with salmonella organisms are the most important rat-borne diseases. Rats also play a part in the spread of other diseases, such as tularemia, rabies, and trichinosis, and are

undoubtedly more of a factor than is generally recognized in spreading various parasites and diseases that affect man. Food establishments frequently are centers of rat infestation. The only permanent solution of the rat problem in this country is ratproofing, combined with sanitation, and the elimination of rat harbors.

### American Journal of the Medical Sciences

*Vol. 192, December, 1936*

*Observations on the effectiveness of protamine insulin. R. Richardson and M. A. Bowie.—p. 764.

*Vol. 193, January, 1937*

*Studies in diabetes mellitus, V. Heredity. E. P. Joslin, L. I. Dublin and H. H. Marks.—p. 8.

The gastric juice in patients with pernicious anemia in induced remission. S. M. Goldhamer.—p. 23.

EFFECTIVENESS OF PROTAMINE INSULIN. Protamine insulin presents a definite improvement over regular insulin in the treatment of diabetic patients on a balanced diet. Both the number of units and the number of injections daily may be reduced, with the blood sugar remaining at a more constant level. In patients who have been controlled with less than 60 units of regular insulin, rearrangement of the carbohydrate distribution offers advantages. Thus, one-fifth of the day's allowance at breakfast and two-fifths at noon and night shifts the metabolic burden so as to coincide with the delayed action of protamine. The feeling of general improvement reported by the patient is gratifying.

HEREDITY IN DIABETES MELLITUS. Although the influence of heredity in the etiology of diabetes is obscured by other factors, it is unquestionably of prime importance. The percentage of patients reporting cases of diabetes in the family is notably large. The predisposition to this disease seems to be inherited as a Mendelian recessive character.

### Archives of Internal Medicine

*Vol. 58, December, 1936*

Calcium and iodine metabolism in thyroid disease. I. D. Puppel, G. M. Curtis.—p. 957.

*Function of the large intestine of man in absorption and excretion: study of a subject with an ileostomy stoma and an isolated colon. C. S. Welch, E. G. Wakefield and M. Adams.—p. 1095.

*Vol. 59, January, 1937*

*Allergy: A review of the literature of 1936. F. M. Rackemann.—p. 144.

FUNCTION OF THE LARGE INTESTINE OF MAN IN ABSORPTION AND EXCRETION. The organic constituents of food are digested and absorbed before they reach the colon. The ileum delivers to the colon solid material and a variable amount of fluid which seems to be near osmotic equilibrium with the blood. This ileal material contains a large amount of sodium and chloride when compared with normal feces. The colon functions in the absorption of electrolytes and water but apparently has no specific part in the excretion of minerals.

ALLERGY. A review of the allergy literature of 1936 shows that most of the problems are not yet solved. Fortunately, students of allergy are paying more attention to the patient as a whole.

### Archives of Pediatrics

*Vol. 53, December, 1936*

*Further studies with beta-lactose—a comparison of the effect of beta-lactose and of fat upon the flora of the infant's stool. J. R. Gerstley, K. M. Howell, H. Zaborowski and G. Morin.—p. 784.

*Eczema in infancy and childhood. I. Prophylaxis of infantile eczema—the diet of the expectant mother. H. Goodman and M. Burr.—p. 790.

BETA-LACTOSE. In formulae containing amounts of beta-lactose sufficient to cause an increased acidity and an increase in the gram-positive flora of the stool, the effect is due entirely to the beta-lactose and is independent of the fat content of the diet. The addition of excess amounts of fat results in no increase in the acidity, or in the gram-positive flora of the stool.

ECZEMA IN INFANCY. Infantile eczema is not primarily a skin disease, but an indication of the absorption of toxic substances resulting from incomplete digestion of food. The dietary indiscretions of the expectant mother

have a decided influence on the severity of the eczema. The dietary needs of the expectant mother are given in detail.

### Journal of Biological Chemistry

*Vol. 116, December, 1936*

*The relationship of vitamin C to glucose tolerance in the guinea pig. A. Sigal and C. G. King.—p. 477.

*The oxygen uptake and composition of the skin of rats in vitamin G deficiency. P. D. Adams.—p. 641.

*The relation of glycogen, fat, and protein to water storage in the liver. A. Kaplan and I. L. Chaikoff.—p. 663.

*Studies on the glutathione content of the blood in nutritional anemia. M. O. Schultze and C. A. Elvehjem.—p. 711.

*Vitamin C in vegetables. IV. Ascorbic acid oxidase. Z. I. Kertesz, R. B. Dearborn and A. L. Mack. —p. 717.

*A study of ketosis in primates. W. Goldfarb.—p. 787.

*Vol. 117, January, 1937*

*Studies on ketosis. IX. Glycogen formation from various purified and natural fats. H. J. Deuel, J. S. Butts, H. Blunden, C. H. Cutler and L. Knott.—p. 119.

*Studies on ketosis. X. Glycogen synthesis after ethyl esters of various fatty acids. J. S. Butts, H. Blunden, W. Goodwin and H. J. Deuel.—p. 131.

*The carbohydrate metabolism of brain. III. On the origin of lactic acid. S. E. Kerr and M. Ghantus. —p. 217.

*The oxidation of ascorbic acid and its reduction in vitro and in vivo. H. Borsook, H. W. Davenport, C. E. P. Jeffreys and R. C. Warner.—p. 237.

*The concentration of total cholesterol in the blood serum. W. M. Sperry.—p. 391.

VITAMIN C AND GLUCOSE TOLERANCE. Successive stages of vitamin C depletion (10, 15, and 20 days) induce a corresponding rise in the fasting blood sugar level and a distinctly lowered glucose tolerance in guinea pigs. The typical peak in the blood sugar curve moves characteristically upward and to the right with successive stages of vitamin C deficiency. Readministration of 10 mg. of vitamin per day, after 20 days' depletion, induces a return to normal within 15 days.

EFFECT OF VITAMIN G DEFICIENCY ON SKIN. The oxygen consumption of the skin of vitamin G-deficient rats declines to a much lower level than in normal rats at the same age. The total fat content is markedly decreased, while the phospholipid content shows only a slight increase.

WATER STORAGE IN LIVER. A study was made of the water content of dog liver. Measurable amounts of water do not accompany the storage of glycogen in the liver or the deposition of fat in hepatic tissue. The water content of the liver is directly proportional to an analytical fraction, the chief constituent of which is protein. The presence of large amounts of fat need not interfere with the capacity of the liver cell to store normal amounts of glycogen.

GLUTATHIONE CONTENT OF BLOOD. In rats suffering from nutritional anemia the total glutathione content of the erythrocytes is decreased. During recovery from anemia the normal conditions are rapidly restored. In the nutritional anemia of pigs there is an increase of both the total and the reduced glutathione content of the erythrocytes as the anemia becomes severe.

VITAMIN C IN VEGETABLES. Enzymes participating in the oxidation of ascorbic acid have been shown to be generally present in vegetables. Already known to be present in cabbage and squash, it has also been found in pumpkins, peas, string beans, lima beans, sweet corn, Swiss chard, carrots, parsnips, and spinach. The relative activity of this enzyme varies greatly in different vegetables.

KETOSIS IN PRIMATES. In 8 experiments on 7 phlorhizinized monkeys the foodstuffs metabolized have been determined from the oxygen consumption, the R. Q., and the urinary nitrogen. It seems probable that the complete oxidation of ketogenic substances requires the simultaneous oxidation of a definite proportion of antiketogenic foodstuffs.

GLYCOGEN FORMATION FROM PURIFIED AND NATURAL FATS. The administration of triglycerides having fatty acids with an even number of carbon atoms to fasting rats was followed by the deposition of significant amounts of glycogen in the liver. After

feeding triglycerides having odd chain fatty acids, much larger amounts of glycogen were found in the liver than could have originated from the glycerol moiety of the fat. Wesson oil, cottonseed oil, peanut oil and linseed oil possessed no glycogenic activity. It is suggested that those fats which cannot be stored as such in the tissues are decomposed, making glycerol available for glycogen synthesis; fats which can be deposited in the tissues as such yield no glycogen and the glycerol is stored away as a component of the neutral fat.

GLYCOGEN SYNTHESIS. The ethyl esters of the odd carbon fatty acids give rise to glycogen when fed to fasting rats, while those of the even carbon fatty acids give entirely negative results.

CARBOHYDRATE METABOLISM OF BRAIN. Both glycogen and the free sugar of mammalian brain are precursors of lactic acid.

OXIDATION OF ASCORBIC ACID. Ascorbic acid is oxidized very slowly in whole human blood. It remains in the reduced state much longer in whole blood than in plasma.

CHOLESTEROL CONCENTRATION IN SERUM. The variation in the concentration of total cholesterol in the blood serum of a given healthy individual over considerable periods of time is much less than the variation among individuals. In most healthy individuals the amount of cholesterol in the serum appears to be maintained at a constitutional level which is characteristic for each individual and from which large deviations do not ordinarily occur.

## Journal of Nutrition

*Vol. 12, December, 1936*

Differentiation between vitamin G and an insoluble factor preventing a pellagra-like syndrome in chicks. A. T. Ringrose and L. C. Norris.—p. 535.

*A quantitative study of the utilization and retention of vitamin B by young children. E. M. Knott.—p. 597.

*The specific dynamic action of butter fat, and of superimposed sugar. J. R. Murlin, A. C. Burton and W. M. Barrows.—p. 613.

*The rate of ketogenesis in human subjects on high fat diets, as influenced by different sugars. J. R. Murlin, E. S. Nasset, W. R. Murlin and R. S. Manly.—p. 645.

*Vol. 13, January, 1937*

Carl von Voit. Editorial Review.—p. 1.

*The iron metabolism of normal young women during consecutive menstrual cycles. R. M. Leverton and L. J. Roberts.—p. 65.

*The utilization of energy producing nutriment and protein as affected by sodium deficiency. O. J. Kahlenberg, A. Black and E. B. Forbes.—p. 97.

RETENTION OF VITAMIN B BY CHILDREN. The utilization of vitamin B, as affected by various levels of ingestion, has been studied by comparing the retentions of 8 young children during 23 metabolism periods. On the basis of the ingestions giving the highest retentions, the optimum vitamin B requirement of young children is estimated to be 20 units per kgm. of body weight or about 40 Chase-Sherman units per kgm. per day.

SPECIFIC DYNAMIC ACTION OF FAT AND SUPERIMPOSED SUGAR. The specific dynamic action of butter fat, eaten as heavy cream, was studied in 9 human subjects. The specific dynamic action of fat does not appear to be due entirely to plethora in the sense of Lusk, for it does not run parallel to blood fat, and superimposed sugar causes increased combustion of fat.

KETOGENESIS AS INFLUENCED BY SUGARS. Sugar causes a marked reduction in total ketosis within 3 to 4 hours. A "late" dose of sugar following an "early" dose was much more effective than the "early" one in reducing ketogenesis. Also it increased carbohydrate combustion. This may be due to replenishment of glycogen in the liver, possibly because of insulin production stimulated by the early dose.

IRON METABOLISM OF NORMAL WOMEN. The total iron exchange of 4 normal young women on an adequate diet during consecutive menstrual cycles was determined over a period of 3 to 5 months by means of a continuous balance experiment. In 9 of the 16 menstrual cycles the subjects were in iron equilibrium or slight positive balance. Ten to 14 mg. of iron daily was the minimal

requirement of this element in the diet. The optimal daily allowance of iron for a 56 kilo woman is 16 to 17 mg.

EFFECTS OF SODIUM DEFICIENCY. In a growth, metabolism, and body analysis experiment, sodium deficiency unfavorably affected the appetite, the increase in weight, the storage of energy and the synthesis of fat and protein. The proportion of energy stored as fat was larger when sodium was included in the diet.

## Journal of the American Dental Association

*Vol. 23, December, 1936*

*Importance of mouth brushing. F. A. Bricker.—p. 2287.

IMPORTANCE OF MOUTH BRUSHING. The mastication of fibrous foods, such as coarse breads, raw vegetables and fruits, is essential to the maintenance of oral health. The influence of acid and alkaline forming food as well as the calcium-phosphorus balance should be mentioned in teaching mouth hygiene. In addition to teaching thorough, intelligent mouth brushing, the dentist should make people realize the fundamental relation between diet and the health of teeth and gums.

## Journal of the American Medical Association

*Vol. 107, December 5, 1936*

*The small intestine. E. P. Pendergrass.—p. 1859.
*Utilization of different forms of iodine. Editorial.—p. 1892.
*Vitamin $B_1$ and pyruvate metabolism. Editorial.—p. 1893.

*Vol. 107, December 19, 1936*

*Production of iodine. Current literature.—p. 2054.

*Vol. 107, December 26, 1936*

*The nutritional significance of gelatin.—p. 2132.
*Loss of cevitamic acid. Editorial.—p. 2135.
*Painting the orange. Current comment.—p. 2136.

*Vol. 108, January 2, 1937*

*The pathologic changes resulting from vitamin deficiency. S. B. Wolbach.—p. 7.
*New forms and sources of vitamin D. C. E. Bills.—p. 13.
*The present status of vitamin deficiencies in practice. J. B. Youmans.—p. 15.
Origin of fecal fat. Current comment.—p. 50.

*Vol. 108, January 16, 1937*

*The possibility of human selenium poisoning. Current comment.—p. 210.

SMALL INTESTINE. The normal stomach empties a test meal of 5 ounces of barium sulfate and 5 ounces of water within 2 or 3 hours. The small intestine stream is continuous with little if any regurgitation or peristaltic rushes. The small intestine not only plays a major rôle in preparing foodstuffs for digestion but also is the portion of the gastrointestinal tract which is most active in the absorption of the products of digestion.

UTILIZATION OF DIFFERENT FORMS OF IODINE. Different forms of iodine are available to the organism in varying degrees. The retention of iodine was found to be highest when this substance was supplied in the form of iodine-containing fats (liver oil) or potassium iodide; somewhat poorer retention was observed if iodine was supplied in the form of watercress, spinach or sardines. Iodine present in milk, oysters and dried haddock was as effective as potassium iodide in preventing thyroid hypertrophy and in promoting the storage of iodine in the gland. Iodine from Irish moss was only partially available to the organism.

VITAMIN $B_1$ AND PYRUVATE METABOLISM. There is an increased amount of lactic acid in the brain of pigeons in the terminal stages of vitamin $B_1$ deficiency. The addition of crystalline vitamin $B_1$ caused an extra uptake of oxygen and pyruvate from the incubating mass of tissue. Probably vitamin $B_1$ is indirectly concerned with the oxidative removal of lactate and pyruvate in the avian brain. *In vitro* evidence of the atypical metabolism of pyruvic acid in avitaminosis pigeon and chick tissues has led to the hypothesis that the syndrome of polyneuritis is directly caused by an accumulation of pyruvic acid.

PRODUCTION OF IODINE. The United States has recently assumed a leading position in the production of iodine. The source of this element is salt brine and the waters from oil wells, the most successful projects being located in California.

THE NUTRITIONAL SIGNIFICANCE OF GELATIN. Commercial gelatin is prepared from

cow skins and trimmings which are usually steeped for several weeks in a solution of lime water, then washed and boiled with water. Pig skins and trimmings, bones and fish skins may also be used. Dried gelatin usually contains 85 to 90 per cent pure protein but gelatin dessert powders contain only 10 per cent. The amino acid composition of gelatin is of no practical concern unless gelatin is the sole source of protein in the diet. The Council on Foods believes that gelatin properly made is a wholesome food and that it has special usefulness when one desires to add variety to the diet by incorporating gelatin in nutritious soups or pleasant desserts which appeal to the appetite.

Loss of Cevitamic Acid. There is a wide variation in the vitamin C content of the blood of so-called normal individuals and a close correlation with the amount ingested. As the human requirement for most of the recognized indispensable accessory food substances is not known, optimal nutrition should be maintained in treating the patient.

Painting the Orange. Recently oranges have been dipped in a solution of harmless coal tar dye which gives a more uniform, brilliant color. The phrase "color added" must be stamped on each orange.

Pathologic Changes in Vitamin Deficiency. The pathology of vitamin A deficiency indicates that the seat of the physiologic disturbances is in the epithelial cells. During the formative period of teeth, vitamin A deficiency outranks all other deficiencies in importance. The most obvious consequence of vitamin C deficiency is the effect on the formation and maintenance of intercellular materials. Vitamin $B_1$ appears to be more directly concerned in the physiology of the nervous system than any other vitamin. A reasonable working hypothesis is that each vitamin is necessary in certain cells for one type of chemical mechanism.

New Forms and Sources of Vitamin D. Eight forms of vitamin D have been artificially prepared. At least two forms occur in fish oils, which may be identical with certain of those made *in vitro*.

Vitamin Deficiencies in Practice. The minimal forms of vitamin deficiencies are important problems in all forms of practice. For the early diagnosis of vitamin A deficiency, there is available a test of slight hemeralopia and the examination of smears from the bulbar conjunctivae. In mild vitamin $B_2$ deficiency, diagnosis depends on suggestive clinical symptoms, a study of the diet and the therapeutic results of relatively pure products such as autoclaved yeast and liver extracts. Slight degrees of vitamin C deficiency may be detected by urinalysis and the response to large test doses of the vitamin. The diagnosis of vitamin D deficiency in adults is difficult. Vitamin E deficiency may be suspected only by the presence of clinical symptoms and a consideration of the diet. Potent and concentrated preparations of the vitamins are available for critical and scientific treatment of these deficiency states.

Human Selenium Poisoning. A large proportion of 111 families living on farms and ranches in Wyoming, South Dakota and Nebraska showed bad teeth varying from marked discoloration to decay, mild or intense icterus suggesting liver damage, various types of skin eruptions, rheumatoid and deforming forms of arthritis, disease of the finger nails with transverse and longitudinal ridging and occasional sloughing, subcutaneous edema, peripheral neuritis, and protracted gastrointestinal disturbances. Urine analysis revealed selenium in quantities of from 2 to 133 micrograms per hundred cc. in more than 92 per cent of the subjects. These symptoms and appearances may be manifestations of selenium poisoning.

## Public Health Reports

*Vol. 51, December, 1936*

*Glutathione and malignant growth. C. Voetlin, J. M. Johnson and J. W. Thompson.—p. 1689.

*Vol. 52, January, 1937*

*Toxicity of fruit sprays. R. H. Heeren and H. B. Funk.—p. 8.

Glutathione and Malignant Growth. Glutathione exerts a marked influence on

the proliferation of cells and on the activity of certain intracellular enzymes. Since glutathione occurs in both normal and malignant tissues, it seems that this substance or its constituent amino acids must be present for growth. The growth rate of a spontaneous mammary carcinoma in mice has been controlled by a diet deficient in cystine and methionine. After a period of growth inhibition, the administration of either cystine or glutathione exerts a striking stimulating action upon tumor growth.

TOXICITY OF FRUIT SPRAYS. A case of arsenic dermatitis caused by the ingestion of three apples picked from a roadside orchard in Iowa led to an examination of apples from various orchards. The lead content of the 1935 crop was in most cases lower than the maximum allowed by the Federal regulations for interstate commerce. The lack of increase of basophilic substances in the red blood corpuscles of individuals who ate sprayed apples regularly indicates that the amounts of lead ingested were not sufficient to produce signs of toxicity. The use of a 1 per cent hydrochloric acid rinse would mitigate a potential danger in apple-growing states.

## INSTITUTION MANAGEMENT

### The American Restaurant

*Vol. 19, December, 1936*

*Myron Green puts modernization to the test. H. C. Siekman.—p. 29.
*"—And a piece of your delicious apple pie". M. B. Strause.—p. 32.
Rice dishes to serve in December. H. Ewing.—p. 37.
History of doughnuts and why they have holes. H. C. Siekman.—p. 39.
*The hours of work you buy. Editorial.—p. 46.

*Vol. 20, January, 1937*

*Man power in the restaurant. C. A. Patterson.—p. 29.
*Menu-merchandising builds increased patronage. H. R. Tully.—p. 34.
*What's new in restaurant equipment this year? K. C. Lovgren.—p. 43.

TESTING MODERNIZATION. Modernization and expansion when renewing a second 5 year lease has resulted in a consistent 74% increase of business for the "Myron Green On The Plaza". Every table is a 2 chair unit, 30 inches square, which permits joining tables to accommodate parties of any size. Beverage service stations, sanitary washrooms, unusual decorative features and superior food are other features. Myron Green, a former president of the National Restaurant Association, has promoted and encouraged the use of home economics college graduates in the restaurant business.

APPLE PIE. Instructions for making dessert profits on apple pie includes apple selection, use of the conserved juice, mixing, placing in crusts, baking procedure, and allowance for steam escape. Pineapple juice is recommended to add distinctive flavor.

BUYING LABOR. Reports on studies of three methods of washing dishes. The fastest method had a saving of 45 minutes a day. Since labor costs average 25% of the total expenditures, the labor motions and minutes thus saved stand out as factors in helping to increase the net profit.

MAN VERSUS EQUIPMENT POWER. Trained employees as important as good equipment in securing efficiency. Lack of care in original employee selection, inadequate wages, waste motion, carelessness, and lack of instruction are frequent causes of low profits. This issue is the Annual New Equipment Review number.

MENUS INCREASE SALES. Kugler's, Philadelphia, established 60 years ago, attributes much of their success to prize winning menus. Discusses items essential to menus as an asset to their sales promotion plan.

NEW EQUIPMENT. Descriptions and illustrations of over 100 pieces of commercial equipment give improvements on old established favorites and show new types available in the 1937 market.

### Buildings and Building Management

*Vol. 36, December, 1936*

*Who is legally responsible for accidents? L. R. Bloomenthal.—p. 22.
*The right mat for the job. E. M. Belknap.—p. 30.
Maintaining Venetian blinds. W. E. Barton.—p. 35.

*Vol. 37, January, 1937*

*Efficient cleaning routine for an office building. J. R. Cheyney.—p. 21.
Standard drinking water requirements.—p. 35.

ACCIDENTS. Legally, all accidents due to poor buildings and to unprotected danger spots are the owners' responsibility, other accidents may or may not be his, depending upon the actual circumstance.

MATS. A summary of the uses, advantages, disadvantages and general information on the ten types of floor matting on the market. These are cocoa matting, corrugated perforated, corrugated, steel, leather, steel with felt filler, tire fabric, rubber link, woven cocoa, and miscellaneous mattings.

CLEANING ROUTINE. A detailed discussion of the duties of day and night porters and a special discussion of the cleaning processes for wood, metal and marble, waxing floors, washing walls, and mopping floors. The summary contains information on the amount of space the cleaning personnel should be able to cover in an 8 hour shift whether mopping floors, waxing floors or cleaning lavatories.

### The Journal of Home Economics

*Vol. 28, December, 1936*

*Some international considerations of the food problem. H. K. Stiebling.—p. 653.
*Nutrition courses in land grant colleges. E. N. Todhunter and B. L. Sparling.—p. 668.
Furniture and furnishings of dormitory bedrooms at the University of Texas. R. S. Godfrey.—p. 671.

*Vol. 29, January, 1937*

*Buying textiles for institution use. G. G. Denny.—p. 23.
*The late food and drugs bill. T. S. Harding.—p. 27.
New ventures by advertising agencies. Editorial.—p. 36.
Textile terminology. Editorial.—p. 37.
*Color changes in large quantity cookery and service of green vegetables. C. H. MacGibbon and E. G. Halliday.—p. 40.
*The use of honey as the sweetening ingredient of cakes. H. Morgan.—p. 45.

WORLD FOOD. Much of the world's population is underfed or poorly fed, particularly with respect to foods rich in minerals and vitamins. The problem is to increase the incomes of the lower economic groups so that they can afford to buy foods needed at prices that will insure a continuing supply. In September, the matter was presented at the International Conference of Agricultural Economists held in Scotland and at the annual meeting of the British Association for the Advancement of Science. Many public and private agencies are attempting remedies on a small scale. Coöperative enterprise has also been successful in many places in lowering food costs. The international committees have discussed the "long-time problem" of increasing the purchasing power of the very poor from many angles.

NUTRITION COURSES. A survey of the courses in the field of nutrition as described in the catalogues of 46 land-grant colleges shows a wide variation in the student year in which a given course may be taken and extreme differences in the prerequisites required and credits allowed. The nomenclature for the courses was found to be confused. These conditions indicate the need for a more complete study of the various divisions of subject matter in the field of nutrition.

TEXTILES. The study of institution textiles is in the pioneer stage. This paper gives buying specifications for purchase of textiles for the new residence halls at the University of Washington. Practical specifications are given for bath towels, blankets, upholstery fabric, institution damask, sheets, pillows and sateen lining.

FOOD AND DRUGS BILL. Success in getting an adequate food and drugs bill through the 75th Congress is dependent upon a well organized, articulate demand by consumers. A careful review is given of the various stages through which this legislation has passed.

QUANTITY COOKING OF GREEN VEGETABLES. Experiments made in large quantity preparation and service of asparagus, broccoli, and

green beans, show that the steam jacketed kettle method of cooking is as successful as the best small quantity method for producing green vegetables of an attractive color. In this method vegetables must be brought to a boil as quickly as possible. Green vegetables on the steam table should be kept uncovered and with much of the water drained from them. The vital factor of the correct steam table temperature was not specifically considered in this study.

HONEY CAKES. Cakes made with honey retain moisture longer than cakes made with sugar. Up to 50% of total sweetening may be honey if liquid ingredient is lessened in accordance with the water content of the honey. If over 50% is used the free-acid content of the honey must be neutralized with sodium bicarbonate. It would be easier to use honey as the sweetening ingredient in various food recipes if the labels on honey containers gave the approximate composition of the honey and its acidity.

### Horwath and Horwath

*Vol. 16, December, 1936*

*Food and beverage costs.—p. 3.
Value of food control to the chef. L. Ergas.—p. 6.
*Rooms per maid.—p. 7.
Cost of painting.—p. 8.

*Vol. 17, January, 1937*

*Hotel operating costs. G. O. Podd.—p. 3.
*Records necessary under Social Security Laws.—p. 4.
*According to Horwath and Horwath.—p. 6.
*Food and beverage costs.—p. 7.

FOOD AND BEVERAGE. Food costs per dollar sale for September were 2 per cent lower than those for September last year. Beverage costs per dollar sale were 8 per cent lower.

ROOMS PER MAID. The term "maids" includes bath, night and relief maids but not parlor maids. Ten rooms per maid is the average number for either a transient or residential hotel. The type of hotel, average room rate, occupancy, number of housemen, and special services are factors affecting the number of maids needed for the particular quality of work decided upon by the hotel.

HOTEL OPERATING COSTS. A return on investment and the proper return on capital is a necessary operating cost. The original capital invested in land and buildings must be taken out by depreciating the property over the estimated period of its useful life and changing each year with the proportion of the amount. Until this is done there is actually no profit and the investment has not the value attributed to it on the books. Depreciation on the building must be considered as well as on furnishings and equipment.

RECORDS FOR SOCIAL SECURITY. Forms designed especially for hotels, restaurants and clubs to meet the demands of the Social Security laws are reproduced and their method of use explained. These forms have been stocked by several hotel stationers and are available to the whole industry.

TREND OF BUSINESS. October is the tenth consecutive month to show a moderate reduction in food cost per dollar sale—3 per cent lower than for October of last year.

CHINA AND GLASSWARE REPLACEMENTS. Annual replacements of restaurant china and glassware in 5 large resort hotels averaged 2 per cent of the total restaurant sales (food and beverages).

### Hospitals

*Vol. 10, December, 1936*

Care and preservation of portable equipment in the hospital. D. C. Smelzer, M.D.—p. 19.
London hospitals—a comparison. N. A. Wilhelm, M.D.—p. 39.
*The cost of food for personnel. G. P. Bugbee.—p. 43.
The result of the survey covering hospital fire hazards. W. S. Outwater.—p. 89.
*Wholesale production of ice cream by the hospital. W. S. McNary.—p. 101.

*Vol. 11, January, 1937*

Faulty faucets.—p. 39.
*Introducing the new intern to the hospital. E. Giddings and N. Smith.—p. 54.
The economical hospital plant as a fundamental factor in economical hospital service. J. Govan.—p. 99.

MAINTENANCE VS. CASH. Because the cost to the hospital of providing meals and living quarters for its personnel is less than when the personnel provide the same grade of maintenance for themselves, it is impractical

in most institutions to do away with the old order. Since the ideal of allowing the personnel to choose freely their lodging and eating places is not easily attained it is necessary to give them the most satisfactory maintenance procurable.

BETTER ICE CREAM. Ice cream made in the institution is of superior quality and costs less than that purchased from commercial concerns wherever the purchase price is more than 65 cents per gallon, since the average cost of the institution-made product, using the highest quality ingredients, is approximately 50 cents. Pure cream only should be used as this insures an overrun of 100 per cent and gives a more satisfactory product. Commercial mixes are usually not so good as those evolved in the institution where an intelligent dietitian spends time experimenting and supervising. The consumption of ice cream will jump from 75 per cent to 100 per cent when the hospital makes its own ice cream and the cost of freezing equipment will more than pay for itself in one year when the size of the institution warrants the outlay.

DIETS AND THE INTERN. New interns are inclined to order many more special diets than are necessary or practical, considering the usual limited nursing and dietary personnel. A manual of modified house diets that will satisfy the ordinary demands of the special diet will be of value to the intern and will lighten the load carried by those supervising the preparation and service of the special foods.

## Hospital Management

*Vol. 42, December, 1936*

*Hospital purchasing. G. F. Stephens, M.D.—p. 21.
*Meal hours in the hospital. H. W. Faddis.—p. 27.
Notes on the Christmas spirit. H. R. Young.—p. 35.
*Christmas bedside service. W. M. Shaw.—p. 36.
Grinstead food price index.—p. 41.
*Turkey comments.—p. 41.
The hospital housekeeper.—p. 57.

SPENDING THE HOSPITAL'S MONEY. A survey indicates that when a hospital has a bed occupancy of 150 or over it is advisable to have a separate purchasing department with a record system, inventories and prices. The purchasing agent should have theoretical control of the hospital stores, equipment and perishable commodities but would profit by conferring with each department head before buying any article not established as staple in that division. The governing body of the hospital should be consulted and should give advice in any major purchase. Salesmen from reputable firms have information of value to the prospective buyer and should be seen at a time set aside for that purpose. It is advisable to patronize local merchants where this can be done without jeopardizing fair competition in an open market.

POSSIBLE CHANGE. Why not establish hospital routines around meal hours rather than the reverse? In small hospitals where patients' meals are served at hours more nearly those of the normal home there is greater satisfaction.

VIEW BEFORE ORDERING. Suggests that a buffet table be set up with Christmas dinner choices and wheeled to the bedside of each patient so that his order may be taken by an attending dietitian. Gives many recipes for unusual items to supplement the Christmas menu.

THE TURKEY. Facts and figures on cooking and yield from turkeys.

## Hotel Management

*Vol. 30, December, 1936*

*New England goes after winter business. Editorial.—p. 507.
A step by step procedure in case of robbery.—p. 518.
*Picking people who use their heads.—p. 526.
*The menu-profit maker. Editorial.—p. 547.

*Vol. 31, January, 1937*

*An apartment hotel remodeling that increased revenue and reduced costs. Editorial.—p. 29.
Remodeling puts dead space to work.—p. 40.
*Out of the red into the black.—p. 46.
*Chart your way.—p. 57.
Why modernize?—p. 133.

NEW ENGLAND WINTER SPORTS. Preparing summer hotels for winter business means doubling the water storage capacity, installing a complete new heating system, tripling

the supply of blankets and changing summer furniture and furnishings. Examples of sport facilities offered and illustrations of advertising methods used to increase clientele are shown.

PICKING INTELLIGENT EMPLOYEES. Requires a knowledge of the 20 qualifications desirable for a maximum return on the employee pay roll dollar. The qualities most essential for the position of waiter, steward, purchasing agent, banquet manager, inspectress and maid are given and also those qualities essential for executive positions.

MENU PROFITS. Fundamental art principles are used in making attractive menu lay-out. The value of the position of food listing, basic design, balance in set up and kinds of type used are shown by illustrations.

REMODELED HOTEL APARTMENT. Tells how the Croydon apartment hotel, New York City, increased revenue and reduced costs by installing savings in engineering department, redecorating, improving service facilities, and expanding coffee shop. Chart shows per cent of total money spent for each item.

OUT OF THE RED. Solicitation of transient trade at higher rates, redecoration of both interior and exterior, efficient air conditioning, promotion work in advertising, a good kitchen organization, and a new cocktail room brought San Francisco's Hotel Plaza out of the red into profit.

CHART YOUR WAY. Illustrates practical charts for use in cutting inspection time of carpets, furniture, windows, walls, woodwork, and bedding. Also gives check list of important points in a hotel remodeling project.

### The Hotel Monthly

*Vol. 44, December, 1936*

Co-operative advertising and effort. H. W. Siddall.—p. 10.
•The new Bright Angel lodge and cabins.—p. 13.
•Chicago Women's Restaurant Club.—p. 25.
How to make money serving food. K. L. Williams.—p. 31.
For the epicure. A. Shircliffe.—p. 50.

RESORT. Description of a new resort in the Grand Canyon near the Bright Angel trail which adequately caters to the well-to-do and those of moderate means.

EMPLOYEE TRAINING. Training employees and carefully checked time schedules as discussed by the Chicago Women's Restaurant Club at their November dinner meeting.

### Modern Hospital

*Vol. 47, December, 1936*

•Ways to reduce dish breakage.—p. 90.
Hotel versus hospital housekeeping. S. Weiss.—p. 94.
Room inventory for housekeeper's office.—p. 96.
Christmas dress for the tray. B. Hunzicker.—p. 98.
•Food frauds unmasked. H. S. Mitchell.—p. 100.
•Food for thought.—p. 104.
January breakfast and supper menus. H. Mallory.—p. 106.
Hardening and dispensing ice cream cabinets. Abstract section.—p. 123.
Treatment and cleaning of bake pans. Abstract section.—p. 124.

*Vol. 48, January, 1937*

•Hospital contracts to pasteurize. R. E. Neff.—p. 90.
System in handling linen. B. I. Newton.—p. 96.
Silver—for beauty and use. A. E. Boller.—p. 100.
In accordance with kosher law. I. E. Reaves.—p. 104.
Food for thought.—p. 108.
February breakfast and supper menus. I. L. Hunter.—p. 110.

DISH BREAKAGE CUT DOWN. A recent survey shows that sorting and stacking accounts for 35 per cent of dish breakage. It is necessary for those bringing soiled dishes into the washing room to have ample space for placing them. This can be arranged by building a series of shelves about 12 inches apart and over the sorting table. Sorting silver before it is washed speeds up the towel drying later. A rubber mat may be used on the sorting table to prevent dishes striking a hard metal surface. Dishes should be scraped with a rubber scraper. Thin glasses will withstand greater changes in temperature than thick ones.

CURE-ALLS. An orderly, logical and scientifically backed refutation of products and diets whose extravagant claims meet the eye and ear through books, advertisements and radio.

BOOK OF ANALYSES. Figures for many commercial food products not analyzed elsewhere

may be found in Bulletin 373 of the Connecticut Agricultural Experiment Station, New Haven, Connecticut.

MILK PASTEURIZED IN THE HOSPITAL. Where milk is consumed in large quantities it is possible to buy it directly from the dairyman, pasteurize and bottle it on the hospital premises and thus be sure of its quality and reduce its bacterial count. The expense is low enough to permit the milk to be served to patients in half pint bottles. Periodic tests in hospital laboratories insure against inferior quality and improper sanitation. A project such as this is possible only where the source of supply is adequate and close at hand and where the hospital is peculiarly fitted to perform its obligations at a reasonable cost. Regular inspection of producer's plant, herds and employees is necessary. A contract must be drawn up with all rules and requisites governing time of delivery, price agreement, butter fat content of milk, protection of employees against disease, etc.

**Personnel Journal**

*Vol. 15, December, 1936*

*Profits, prices, and wages. C. S. Slocombe.—p. 197.
*Better lighting for workers. C. E. Ferree and G. Rand.—p. 207.
*Wage-setting research. C. C. Balderston.—p. 220.
*Tested selling sentences. E. Wheeler.—p. 225.

*Vol. 15, January, 1937*

*Reactions of employees. Panel discussion. C. S. Slocombe, T. E. Torrance, T. North Whitehead, H. A. Wright.—p. 235.
*Labor costs and administered prices. C. S. Slocombe.—p. 241.
*Ford apprentice training courses. F. E. Searle.—p. 247.
Nervous health in industry. L. G. Giberson, M.D.—p. 255.
*Testing for aptitudes. W. V. Bingham.—p. 264.

WAGES. Preceded by an explanation of the conditions which led to the prosperity of 1924–29 and the depression of 1929–33, the author explains how the individual large scale production firms may prevent recurrence of such abnormal conditions by establishing an economic research department to study existing conditions and formulate the best distribution of prices, wages and profits.

IMPROVED LIGHTING. Hygienic measures with reference to lighting may be carried out to provide optimum working conditions with the correct intensity of illumination, the elimination of glare, the varying of the intensity and placement of light and the use of commercial color correction.

WAGE SETTING. Research in wage setting must be carried out from the point of view of human values, with consideration for personal feelings and emotional reactions of the employees as well as other economic factors such as "basic compensation", "extra compensation", and motion and time study.

SALES SENTENCES. Specific "selling sentences" increase sales by leaps and bounds as proved by practice and study. The purpose of the Tested Selling Institute as outlined at Johns Hopkins and New York University laboratories is to weigh and measure the relative importance of words and phrases on customers.

GROUP NEGOTIATIONS. The more abstruse and hidden wants of employees must be considered and understood if negotiating with organized employees is to be successful. New plans will continue to meet with suspicion unless employees feel that proposals made will be carried out.

COSTS VERSUS PRICES. Analysis of past operations of a large corporation shows little relationship between costs, prices and profits in their prevailing price system. Failure to consider labor as both a cost item and a consumer factor is noted as an effect on the balance of national economy.

APPRENTICE COURSE. Discussion of educational opportunities offered in two schools: Henry Ford Trade School for boys of 12–15; and the Ford Training School for high school graduates between 18 and 20. Graduates of these two schools become members of the Ford Apprentice School which develops skilled mechanics and specialty men needed by the company.

JOB TESTS. Hiring and placement is an art which scientific method supplements but does not replace. New and revised tests for mental alertness for bench work, dexterity, as-

sembly work and mechanical intelligence have been developed during the past year. The importance of the results of the research by Thurstone, Burr and Metcalfe, and Terman are shown by the revised "I. E. R. Assembly Tests for Girls"; "Frazier's Card Dropping Tests"; "Stanford-Binet Scale", and "Strong's Vocational Interest Blanks for Women". The selection and administration of aptitude tests, and above all, the interpretation of test scores is a technical matter requiring mature judgment and wide familiarity with the various occupations, as well as a mastery of differential psychology and the statistical theory of probabilities.

### Restaurant Management

*Vol. 39, December, 1936*

*Webber Duck Inn.—p. 437.

*Vol. 40, January, 1937*

*Profit through many windows.—p. 11.
Picking people who use their heads.—p. 15.
*Careful waitress training brings more business.—p. 24.

WEBBER DUCK. A recipe for the preparing and roasting of duck as done at the Webber Duck Inn in Wrentham, Mass.

PROFIT AND WINDOWS. How the Mary Elizabeth tea room, New York City, revived a sliding business with timely and unique window displays.

WAITRESS TRAINING. Personality, not high pressure salesmanship, should sell the food. A well trained waitress with a pleasing personality can sell more food than a sales expert. A survey of one restaurant's training methods in Los Angeles.

# NEWS NOTES

**American Dietetic Association.** The mid-year Executive Committee meeting was called by the President, Lute Troutt, for the week end of January 30, 1937 at the Blackstone Hotel, Chicago.

All members of the Committee in addition to the Business Manager, the JOURNAL Editor, and the Publicity Chairman, were present. The meeting followed that of the Finance Committee that had previously drawn up a tentative budget for the approval of the Executive Committee. Other matters taken up for discussion and approval were the appointments of Mary Barber as member of the Finance Committee to fill the vacancy occasioned by Mable MacLachlen's resignation, and that of Marie Mount as chairman of the legislative Committee following Mary Lindsley's resignation. Other appointments confirmed were as follows: Library Committee, Edweena McCafferty, 228 26th Ave., Calgary, Alberta, Canada; and Program Committee, Margaret Edwards, Women's College of the University of North Carolina, Greensboro.

Other matters coming up for discussion were the report of the Revisions Committee, the plans of the section chairmen, the program for the Richmond meeting and the proposed monthly JOURNAL to begin in January 1938.

**Dietitians Aid in Flood Relief.** Following Miss Troutt's telegraphed offer of assistance to American Red Cross headquarters, M. Faith McAuley has been assigned to duty at Memphis, Tennessee, and Mame T. Porter to Louisville, Kentucky. This news comes as the JOURNAL goes to press.

**Training Courses for Student Dietitians.** Kate Daum, chairman, Professional Education Section, American Dietetic Association, writes that the following corrections should be made in the list of courses for student dietitians appearing in the November 1937 JOURNAL: Pennsylvania Hospital reports one month spent in affiliation instead of two; "Seattle Coöperative" should read "Seattle Course for Hospital Dietitians" and the "University of Seattle" should read "University of Washington Course for Student Administrative Dietitians."

**Diet Therapy Conference.** Diets under conditions of extreme heat and humidity as in metal mines or in the construction of the Boulder Dam will be discussed at the Annual Meeting in Richmond in October, according to Mrs. Marble, chairman of the Diet Therapy Section.

Since data are available for the computation of the vitamin B content of diets, dietitians have been surprised by analyses of their usual hospital diets. This pertinent problem in American dietetics will be presented for discussion by interested members from different parts of the country.

Massachusetts and New York State Associations are compiling a list of manufacturers' analyses of commercial food products, the figures for which are now available individually and usually are not at hand when most needed by dietitians.

Peruvian food habits will be described by a dietitian who has spent three years working in Peru.

The teaching of patients has been a subject of national diet therapy committee study for the past few years. It is being continued by the California Dietetic Association. Their report at the Conference will be of interest to all dietitians working with patients in hospitals and clinics.

This Conference will include food clinic developments, reports of research work by members, outstanding case reports, and new methods of organization and procedure for administering special diets.

This special Conference will take the place of the usual diet therapy meeting, heretofore called "Round Table" even though the size of the meeting has long since made a real round table discussion impractical. Any members wishing to report at the meeting should send two copies of material in the form they wish to present at Richmond to Beula B. Marble, 695 Huntington Avenue, Boston,

between now and June 1, 1937. Presentations will necessarily be limited to five minutes each.

**Northwest Nutrition Research Round Table.** Dr. E. N. Todhunter, in charge of research in the home economics department at Washington State College, organized the Northwest nutritionists and research workers into a group and arranged the following program for February 6, to be held at the Davenport Hotel, Spokane. The program was arranged into a discussion of present research —techniques and interpretation of data, and future research—nutrition needs of the Northwest and how they may be met; and coöperative plans for further work.

Among those who were expected to attend were: Professor Jessamine Williams and Dr. Margaret Finke, Oregon State College; Dr. Jennie Rowntree, University of Washington; Dr. Ella Woods and Professor Elsie Maxwell, University of Idaho; Mrs. A. P. Brown, Utah State College; Dr. Jessie Richardson, Montana State College; Professor Leila W. Hunt, Dr. E. N. Todhunter, and Mildred Boggs, Washington State College; Betty Lee Sparling; and Clare Hartnett, Washington State Department of Health.

**The American Society for the Control of Cancer** has recently organized a Women's Field Army and in March will put on an extensive campaign of education throughout the United States and attempt to obtain enlistments. It has been estimated that there are between three and five hundred thousand sufferers from cancer today. Perhaps half of them might be saved if they are given knowledge of the signs and symptoms which might mean early cancer, and if they are encouraged to act on that information without delay. To combat cancer is a common task which will recognize no preference, and it is hoped that many will volunteer their services in this educational campaign to control cancer.

**Diabetes Clinic Meeting.** Elevation of the standards for medical, surgical and social service care of diabetes patients in the clinics of New York City are the objectives of the Committee on Diabetes Clinics of the New York Diabetes Association. The committee announces its first public meeting, to be held at Cornell University Medical College Amphitheatre, New York City, on March 5, at 8:30 P.M. Elaine P. Ralli, M.D., chairman of the committee, will open the program with a report on minimum requirements. The scientific paper of the evening will be "Pregnancy in Diabetes," by Edward Tolstoi, M.D., and Robert Gordon Douglas, M.D., with discussion by William Studdiford, M.D., and George E. Anderson, M.D. Physicians working in diabetes clinics and all others interested are cordially invited to attend.

**Stanley R. Benedict, Ph.D.,** professor of biological chemistry at the Cornell University Medical College, New York City, died of a heart attack at his home in Elmsford, N. Y., on December 21, 1936. Dr. Benedict had directed the chemical cancer research at the college for nearly twenty-five years. In February, 1935, he reported with Dr. Kanematsu Sugiura that he had found, in experiments at Memorial Hospital, New York City, a direct relationship between the amount of magnesium in food and the rate of growth of the body and of malignant tumors. Dr. Benedict once demonstrated that phloridzin, injected into the body of animals, interfered with the burning of sugar. In 1910 he perfected a chemical test for the measurement of sugar in urine which is today known as the Benedict test. Dr. Benedict was president of the American Society of Biological Chemists in 1919–20 and was managing editor of *The Journal of Biological Chemistry.*

**Alice Wright Penrose,** director since 1914 of the home economics department of the Ballard School of the Y. W. C. A., New York City, died at Bryn Mawr, Pa., on December 21. Miss Penrose was a graduate of the Drexel Institute, Philadelphia, president of the New York Association of Dietitians in 1921–22 (now Greater New York Dietetic Association), recording secretary of the assotion in 1919 and first vice-president in 1920. Members of the New York association who recall the days when the association met at

the Y. W. C. A. will remember Miss Penrose as the hostess on these occasions. Those who knew her will feel a keen personal loss in her death.

**Dr. Miriam Skirball,** wife of Dr. Louis I. Skirball, of Newton, Massachusetts, died on January 7, 1937 at her home. Members of the American Dietetic Association who heard Mrs. Skirball's beautifully presented and enlightening address at the Boston meeting will be shocked and grieved to hear of her death. The mother of two small sons, Mrs. Skirball was a noted lecturer on current literature. She also spoke over the radio and was a contributor to current magazines as well as the author of several books. A graduate of Goucher College, she had received her A.M. and Ph.D. degrees in English literature at the University of Pennsylvania.

**The Food Clinic, Beth Israel Hospital, Boston,** was recently represented on the program of one of the hospital's semi-monthly medical staff conferences. The chief of the Diabetic Clinic presented diabetic patients who had especially interesting symptoms. Marie M. Mayer, chief of the Food Clinic, then discussed the vitamin $B_1$ content of diabetic diets. There was an attendance of 75 or more members of the hospital personnel and a great deal of interest was shown in Miss Mayer's paper.

Recently, at the request of Miss Rutherford, director of health education of the Y. W. C. A., Miss Mayer gave a talk on nutrition to one of the groups of young women there.

**The Commonhealth,** published by the Massachusetts Department of Public Health, has devoted Volume 23 for July, August and September, 1936, to "Dental Health". George E. Davis, D.D.S., president of the Board of Education, Floral Park, Long Island, in his article "Dental Health Education for Children," emphasizes that all children should be under the influence of dental health teaching which should be done in the school, and outlines a program for such education. John J. Desmond, in his "Trained Teachers of Health" points out that there is a lack of specially trained teachers of this important subject since there is no provision made for the training of prospective teachers of health. Florence B. Hopkins, M.D., D.M.D., of the Massachusetts Department of Public Health, is the author of a paper entitled "What Dentists Should Do About Nutrition" read before the New England Dental Society and published in this volume. The report of the Committee on Nutritional Problems of the American Public Health Association on "Food Fallacies and Nutritional Quackery" appears in the same issue.

**Training Housekeepers in Coöperation with WPA.** The Department of Public Welfare, Providence, R. I. is endeavoring to train housewives to feed a family on a WPA salary, keep the house clean, repair worn clothing, and find time to care for the baby. Nine women have so far been trained in a four weeks' practical course for this work, after which they visit families and assist housekeepers. Florence O'Connor, nutritionist, State Employment Relief, is also on the Staff of the newly formed Housekeeping Aid Project. It was Miss O'Connor's report of a similar undertaking in Newport that furnished the idea for the Providence project.

**Field Practice Course at New York Hospital.** The Department of Institution Management of Teachers College, New York, announces a field practice course under the direction of S. Margaret Gillam at the New York Hospital from July 10 through August 20 which offers observation and experience in the management of food service in the institution. Clinics are arranged by physicians on the staff of the New York Hospital and Cornell University Medical College. Students may register for this course and for Institution Management S151 during regular summer registration periods at Teachers College. Fees, including registration, amount to $82. The course is open to graduate dietitians whose training and experience are satisfactory to the instructor.

**The Alabama Dietetic Association** held its first meeting of the season in Birmingham

on September 26. The guest speaker, Dr. James S. McLester, Birmingham physician and past president of the American Medical Association, discussed the duties of various councils of the American Medical Association.

The second meeting was held at the University of Alabama in the form of a luncheon served in the attractive new dining rooms, with Mrs. Ina Barber Crane, head dietitian, in charge. After the luncheon the group gathered at the Home Economics Building where Dr. Marietta Thompson was the guest speaker. Following the business of the day, Agnes Ellen Harris and her classes in foods were hostesses at a tea.

**The Atlanta Dietetic Association** met in special session at the Piedmont Hotel on November 7 with members of the Georgia Dietetic Association as guests. Mrs. Gussie Tabb King, of Milledgeville, presided as toastmistress at the dinner meeting during which Catherine Newton, professor of nutrition at the University of Georgia, reported on the Boston meeting.

The evening session convened with Leah Ascham, president, as chairman. Anna M. Tracy, chairman of the Administration Section of the American Dietetic Association gave a résumé of the organization of the Association and most ably discussed some of the newer policies.

Dr. Jennie Tilt of Florida State College for Women addressed the group on dietetics as a profession. Her vision of the unlimited opportunities in the field was most inspirational.

The executive committee of the Georgia Dietetic Association held a session in the afternoon. The president, Gladys Stoddart of Augusta, announced that the annual meeting would be held in May at Macon on the same date as the Georgia Medical Association.

**Greater New York Dietetic Association.** Under the direction of the Administrative Section the January meeting was held on January 25 at the American Red Cross Building, New York City. The speakers were: S. Margaret Gillam, director, Department of Nutrition, New York Hospital, "Food Appeal Through Menus"; and Dr. Agnes Conrad of the Vanderbilt Clinic and associate professor, College of Physicians and Surgeons, "The Psychology of Eating".

At the annual banquet on February 9, held at the Hotel Pennsylvania, Dr. George R. Cowgill associate professor of physiological chemistry, Yale University, addressed the members and their guests on "Vitamin Requirements of Man".

On March 17 at the Academy of Medicine the joint meeting of the Home Economics Association, the Home-Making Teachers Association, and the Greater New York Dietetic Association will take place. Dr. John W. M. Bunker, professor of biological chemistry at the Massachusetts Institute of Technology, will discuss "Biological Engineering".

**Kansas City Dietetic Association** met September 28 at the Business and Professional Women's Club for the first meeting of the year. After a dinner in charge of the hostess, Nelle Reese Evans, reports of the Missouri State Dietetic Association meeting held in Columbia, September 17 and 18 were given by the following: Ethel Ollis, Research Hospital; Mrs. Vera Davis, General Hospital, Kansas City; and Susie Geiger, formerly of St. Joseph Hospital, Kansas City.

On October 27 the association met at the University of Kansas Hospital with Bernice Keim, Jennie Faye Schweiter, and Kathryn Freeman as hostesses. Pearl Haas, head of the Home Economics Department of the University of Kansas City, gave a résumé of her vacation trip through Europe. Officers were elected for the following year as follows: president, Laurene Gernes, St. Margaret's Hospital; vice-president, Wilhemina Krumsick, Trinity Lutheran Hospital; treasurer, Mabel Beeler, Federal Reserve Bank; secretary, Edith Cross, 6946 Paseo; and corresponding secretary, Fae Buckle, Research Hospital, all of Kansas City, Mo.

**Louisiana State Dietetic Association** held its annual meeting at Arnaud's Restaurant in the Vieux Carre in New Orlans on December 14, 1936. Ann B. Eyl of Louisiana State

Charity Hospital, and retiring state president, presided. The following officers were elected: Mrs. Robert Polack, community chest nutritionist, president; Mrs. Beth Bailey McLean, home economist, Southern Rice Industries, vice-president; and Stella R. Fujan, Charity Hospital, secretary-treasurer.

The fourth meeting of the association, a dinner and business meeting, was held January 11 at Touro Infirmary. Helen Young, staff dietitian of *Hospital Management* talked on "What Hospital Management Magazine is Doing to Improve Standards of Hospital Dietetics." Mrs. Beth McLean read a letter of appreciation from Hermine Ujffy of the Family Service Society, for the food supplies and gifts presented to a poor family "adopted" by the association for Christmas. Due to having accepted a position with Swift's in Chicago, Mrs. McLean resigned as an active member and as vice-president. Mrs. John Kahrs, Touro Infirmary, was appointed as vice-president. The president appointed the following section and committee chairmen: Administration Section, Mrs. John Kahrs, Touro Infirmary; Diet Therapy, Helen Carmody, Hotel Dieu; Professional Education, Ann. B. Eyl, Charity Hospital; Community Education, Mrs. Robert Polack, Community Chest; and Nominating Committee, Ann B. Eyl.

The February meeting is to be held during the third week at Hotel Dieu, the regular date of meeting having been changed due to Mardi Gras.

**Maryland Dietetic Association** held a successful benefit card party at the Hotel Emerson in Baltimore, February 4. Martha Trulson, Union Memorial Hospital, was in charge of general arrangements. Much credit goes to Alma Bering, Sheppard Pratt Hospital, Towson, Md., for her able assistance in preparing the table prizes. Orange marmalade, brownies, cookies, stuffed dates and candied orange peel were attractively wrapped in cellophane and red ribbon. Numerous door prizes were given by leading merchants of the city. The party was held to help finance the state convention to be held in Baltimore in April. A donation was given to the Red Cross to aid in flood relief.

Dr. W. L. Love, Jr., associate professor of medicine, University of Maryland, was the guest speaker at the December meeting held at the University Hospital, and his subject "A Consideration of Certain Dietetic Factors in the Treatment of Heart Diseases." Blanche Swanson and Miriam Connelly were hostesses. A very attractive buffet luncheon was served to more than fifty dietitians.

Martha Brothers, Johns Hopkins Hospital, is chairman of the seminar group of the diet therapy division. Round table meetings are to be held regularly. It will give the therapeutic dietitian a chance to compare her theory with practical experience. Able leaders from the various hospitals in the city will discuss important problems necessary to keep pace with the modern trend in diet.

One of the most interesting meetings of the year was held at the College Club, Baltimore, January 11, and conducted by the section chairman of the respective committees. Mary Faulkner, supervisor of home economics, professional education division, gave an illustrated talk and movie on "Education in Applied Home Economics in the Public School System of Baltimore". Alma Bering, Sheppard Pratt Hospital, Towson, Md., administrative chairman, introduced Mr. Crocker of the Bureau of Standard Weights and Measures of Baltimore. He displayed weights and measures confiscated from the dealers. Alice McLean, Johns Hopkins Hospital, gave out prepared sheets showing "The Factors for Cooking Common Vegetables". These charts had been prepared at the hospital and included the weight of ten common vegetables, before and after cooking. Martha Brothers, Johns Hopkins Hospital, chairman of the diet therapy division, introduced Helen Baughman, who gave the report on protamine insulin work being done at Johns Hopkins Hospital this winter. Julia Norman, Springfield State Hospital, Sykesville, Md., read a résumé of a paper on protamine insulin in the treatment of the tuberculous diabetic, which has been accepted for publication by the *Journal of the American Medical Association*.

Phyllis Rowe, Johns Hopkins Hospital,

entertained thirty student and staff dietitians at dinner at the Hotel Belvedere, during the Christmas holidays. It was one of those "Do you remember when" parties. Ernestine Becker took top honors in relating amusing incidents that happened when Miss Rowe was a student dietitian.

**Massachusetts Dietetic Association.** The following papers were presented at the monthly meetings of the association: December 1, "Nutritional Cataract, Recent Experimental and Clinical Observations", Dr. Helen S. Mitchell, research professor (nutrition), Massachusetts State College; January 5, "The Rising Tide of Adult Education", Dorothy Hewitt, director, Boston Center for Adult Education; February 2, "Methods and Materials for Teaching the Food Constituents", Mary Pfaffman, health educator, Boston Dispensary, and "Applied Dietetics: Teaching the Medical Students", Dr. Francis C. McDonald, assistant physician, Boston Floating Hospital. The annual dinner meeting will be held on March 2, with Mrs. Mary P. Huddleson, editor of the JOURNAL, as speaker.

**Michigan Dietetic Association** held its midwinter meeting on January 15, at the University Hospital. Following the business meeting at which Margaret Ritchie, president, presided, a report was given by Alice Griswald, home economics advisor to the ERA, on the work being done in Michigan.

The afternoon program included addresses by Bernard Proulx, Michigan State College, on "The Hotel Field for Women", and Dr. H. B. Lewis, Department of Biochemistry, University of Michigan, on "The Growing Importance of Chemicals being used as Sprays for Food Products and their Effects on the Health of Humans". Dr. Philip Jay, Department of Dental Pathology, spoke on "Dental Caries". His talk was illustrated by slides showing results of recent experimental work done at the University Hospital.

The annual meeting in conjunction with that of the Michigan Hospital Association will be held in Ann Arbor, April 15 and 16.

Jane Porter, Women's City Club, Detroit, recently gave an interesting paper on food fashions at the annual business meeting of the Michigan Home Economics Association held in Detroit on October 16, 1936. Following her paper, a "Parade of Food Fashions" was presented and included trays of fruit juices, attractive canapes, salads, breads and desserts.

**Oregon Dietetic Association.** Emily Nightengale, nutritionist with the public welfare department of Washington was the speaker at the first meeting of the new year following a dinner at Multnomah Hospital. The members from this state are looking forward to the sectional meeting in Seattle planned for later in the spring.

**Dietitians Association of Philadelphia.** The first meeting following the Christmas holidays was held on January 12 at the Lankenau School for Girls. Dr. Stanley P. Reimann, director of the Lankenau Hospital Research Institute, delivered a paper on "Cancer and Diet" and directed the group on a visit through the Research Institute. Sister Maude Behrman, head dietitian of the Lankenau Hospital, presided at the meeting.

"Annual Game Night" was held at Shrafft's Restaurant, January 26. The proceeds from this party were added to the welfare fund of the association, which contributes each year to various charitable organizations in Philadelphia.

The February monthly meeting, held at the Pennsylvania Hospital on February 9, was in the form of a symposium. The subject was "Administrative Problems of the Dietitian", and those who contributed to the discussion were Ruth Boyd, Zetta Jackson, Katherine Louser, and Lucille Refshauge. The participants related the administrative problems of dietitians in hospitals, restaurants, and school cafeterias. The audience entered into the discussion with many questions and created a lively session.

The Administration Group Meeting at St. Joseph's Hospital on February 23 discussed "Cost Accounting". Dixie Rudberg, director of the Dietary Department of the University of Pennsylvania Hospital, was chairman, and those present came away with a

fund of information on the subject of cost accounting.

Laura Drummond of Temple University is the new vice-president of the association. She has filled the vacancy left by Margaret Richert who recently left the city.

Sadye Adelson former home economist of the Jewish Welfare Society of Philadelphia, is now with the United States Bureau of Home Economics. She is located in Baltimore and is supervisor of the consumers' purchases study.

Several changes in staff have occurred at the Pennsylvania Hospital. Elizabeth Ann Conoway, former assistant dietitian, became Mrs. Thomas Hansen on last Thanksgiving Day. Her position was filled by Ella Delaney. Eunice Youngquist, of Kansas State College, and Sarah Campbell, of Skidmore College, have just begun their student courses.

Mr. and Mrs. Thomas Wiesen announce the birth of a son, Richard Bell Wiesen. Mrs. Wiesen is the former Dr. Marion Bell of Temple University.

Word has been received of the death of Mrs. Leo Yoder, née Martha Hinshaw, of Dormont, Pennsylvania. Mrs. Yoder was a former student dietitian of the Philadelphia General Hospital.

**Rhode Island Dietetic Association.** On January 14, Mrs. Margaret Thompson of the Bureau of Labor Statistics, Washington, spoke of her work in making a survey of consumer purchasing in Providence. Mrs. Thompson has been working on the subject for over a year. Dr. Mary de Garmo Bryan spoke at the joint meeting of the Home Economics Association and the Rhode Island Dietetic Association on February 11 at the Chapin Hospital.

**The Rochester Dietetic Association** held its monthly meeting on December 17 at the Highland Hospital with Eleanor Pfluke and Mary Shay as hostesses and 35 members present. The vice-president, Mrs. Charles Fordyce, presided. Following the business meeting, Dr. John R. Williams, diabetic specialist at Highland Hospital, talked on diabetes mellitus, covering the following points: history of diabetes previous to discovery of insulin; discovery of insulin; effect of insulin on dietary treatment; and comparison of old insulin with protamine insulin and crystalline insulin.

On January 21 the association met at the Rochester General Hospital with Effie May Winger and her assistants as hostesses, 35 members present and the vice-president presiding. Following the business meeting, Dr. Samuel H. Bassett, associate professor of medicine, Strong Memorial Hospital, presented a talk with slides on "Metabolic Studies of Idiopathic Steatorrhea." Dr. Bassett's talk was based on a study which he had carried on at the Strong Memorial Hospital.

**The Texas State Dietetic Association.** The executive committee and program committee met in Dallas, January 23 to discuss plans for the state meeting with the following members present: Olive Black, Frances Ross Lawler, Mamie Ruth Harris, Helen Seago, Blake Bryson, Frances Low, Nell Morris, Ruth J. Cooper and Irene Pope Hardy. The convention will be held on April 2–3. An interesting program has been planned by the program committee: Frances Ross Lawler, chairman, Ruth J. Cooper and Rosalie Godfrey. The Dallas Dietetic Association entertained these committees at a luncheon in the beautiful Mural Room of the Baker Hotel.

An interesting meat cutting demonstration was given at Hermann Hospital, Houston, by Max Cullen of the National Livestock and Meat Board before the South Texas Dietetic Association on January 28.

Mozelle Craddock, manager of dormitories, Texas Technological College, Lubbock, is a new member of the American Dietetic Association.

Gertrude Samson of St. Louis Maternity Hospital has accepted a position as assistant dietitian at Hermann Hospital, Houston.

Mrs. Kathleen Ayers Davis has resigned as head dietitian at Jefferson Davis Hospital, Houston. She has been succeeded by Gladys Lyons, formerly of Hermann Hospital.

**The Utica Dietetic Association** held its first fall meeting in October at St. Luke's Hospital. Following the business meeting Mame T. Porter gave a complete and interesting report of the national meeting in Boston.

The November meeting was held at St. Elizabeth's Hospital where the members were guests at a very enjoyable entertainment presented by the students of the training school.

In December the meeting was held at St. Luke's Hospital. The guest speaker was Dr. T. Wood Clark whose topic was "Allergic Diseases".

In January the association had the pleasure of entertaining Emma L. Feeney, president of the New York State Dietetic Association, at a dinner in the Sunnyside Tea Room. Following the dinner Miss Feeney spoke to the group about the various projects which are being worked out by the national and state organizations this year.

**Washington State Dietetic Association.** Dietitians from various parts of the state assembled for breakfast on January 23 in the Persian Dining Room. This restaurant is of particular interest to dietitians and home economists because it is owned by two members of the Home Economics Department of the University of Washington. The restaurant provides experience for home economics graduates interested in the commercial field of institution management. Assisting in the management of the Persian Dining Room forms one unit of the administrative training course.

The morning session followed at Harborview Hall, the home of nurses and dietitians on the staff of the King County Hospital. Mary Northrup, president of the Washington association, presided. The first speaker was Dr. E. Neige Todhunter, assistant professor of nutrition, State College of Washington, her subject, "Some Present Day Problems in Nutrition". This paper is being submitted to the JOURNAL for publication. The second speaker was Vernon A. Mund, Ph.D., assistant professor, College of Economics and Business, University of Washington, whose subject was "An Analysis of Some Current Economic Problems". Dr. Mund traced the development of modern capitalism, the effects of monopolies and competitive capitalism, and followed this with a discussion of the various social policies represented by the economist's point of view, the "New Deal", consumer coöperatives, and the outlook toward the forces influencing future economic conditions.

At luncheon, Henrietta Adams, educational director, Harborview Division of the School of Nursing, University of Washington, spoke entertainingly on some of her observations of the developments in hospitals abroad and at home while on a recent European trip.

The afternoon session, in charge of the Diet Therapy Section, presented Dr. Norman W. Clein, M.D., Seattle pediatrician, who spoke on "Recent and Practical Knowledge of Infant Nutrition". Miss Northrup then announced some of the plans for the regional meeting of the dietitians from the states of Idaho, Montana, Oregon and Washington, to be held in the spring. The meeting adjourned following a tea with the King County Hospital dietitians as hostesses.

**Gardner Advertising Agency,** of St. Louis, has completed new offices in the Mart Building, where Mrs. Thelma Reinke Lison has under her direction two of the country's most modern gas and electric kitchens. Mrs. Lison is also responsible for the scientific accuracy of the radio programs broadcast four times a week from these kitchens over the Columbia network. Mrs. Lison received her master's degree in home economics from Columbia University and is one of only seven graduate home economists engaged in advertising work in this country.

**"Coffee Facts for Homemakers".** The American Can Company's releases on coffee have been completely revised, according to Isabel N. Young, director of the Home Economics Department. She will be glad to answer questions about coffee and send copies of any of the material of interest.

**The Heinz Book of Quantity Recipes and Menus** is to assist restaurant, tea room and other food purveyors in broadening their menus. Its collection of recipes and menus to serve 25 to 50 is planned to help in pro-

viding balanced meals at moderate cost with a minimum amount of labor. Smaller restaurants may reduce the recipes to half or whatever proportion is desired. Larger restaurants may increase the recipes as needed. Copies may be secured by writing to the H. J. Heinz Company, Pittsburgh, Pa.

**Southern Rice Industry** has published quantity cookery recipes based on economy, variety and appetizing appearance, prepared by Beth Bailey McLean, director of home economics for the Southern Rice Industry, in coöperation with well-known dietitians. Requests for these sheets should be sent direct to Mrs. McLean, Southern Rice Industry, Masonic Temple Building, New Orleans, La. There is also available from the same source "Rice in the Hospital Diet", a booklet of particular interest to hospitals.

# WHO'S WHO IN THIS ISSUE

**C. Macfie Campbell** received his M.A., B.S., M.B., Ch.B. and M.D. degrees at Edinburgh University. He was associate professor of psychiatry at Johns Hopkins University before becoming professor of psychiatry at the Harvard Medical School in 1920, which position he now holds. He is a member of the American Psychiatric Association, American Psychological Association, and American Neurological Association.

**George R. Minot** received the degrees of A.B., M.D. and S.D. (hon.) from Harvard University. He is chief of the medical service of the Collis P. Huntington Memorial Hospital, Boston, professor of medicine at Harvard University, director of Thorndike Memorial Laboratory, and visiting physician, Second and Fourth Medical Services (Harvard) of the Boston City Hospital. Dr. Minot is an honorary fellow of the Royal College of Physicians, Edinburgh, the Royal Society of Medicine, London, fellow of the American Philosophical Society and member of the American Academy of Arts and Sciences. His honors have been many, the most recent being the 1934 award of the Nobel prize in medicine for work on liver treatment of anemia, received jointly with William P. Murphy and George R. Whipple. He is the author of more than ninety papers, chiefly on the blood. In 1926 he discovered the curative effect of liver on pernicious anemia.

**Wilson G. Smillie,** M.D., D.P.H. (Harvard), is well known for his distinguished work in the field of public health. He was with the Rockefeller Foundation for a number of years prior to his appointment in 1927 as professor of public health administration, Harvard School of Public Health. He is the author of *Public Health Administration in the United States* and of many other publications on medical subjects. Because of his recognized position in the field of public health, Dr. Smillie's paper in this JOURNAL offers a most authoritative statement of the place of the nutritionist in public health.

**Dorothy Duckles** was research assistant in agricultural chemistry at the University of Wisconsin, Madison, when the experimental work reported in this JOURNAL was done. She is now therapeutic dietitian, Massachusetts General Hospital, Boston. **Lorna Willis** was also research assistant in agricultural chemistry at the same university. **C. A. Elvehjem** is professor of agricultural chemistry, University of Wisconsin.

**Sister Jeanne d'Arc** received her M.S. degree in 1928 from the University of Chicago, and her Ph.D. degree in 1933 from the same institution, majoring in foods and nutrition. At present she is professor of dietetics and nutrition at the College of St. Catherine, St. Paul, Minnesota.

# INDEX TO VOLUME XII

The following abbreviations indicate in which section the material indexed appears: ab., abstract under current literature; a.p., association progress; a.r., annual reports; c.c., current comment; ed., editorial. Author index, which appears following subject index, includes only the names of authors of original material appearing in this JOURNAL in full or abstracted under the editorial section, and names of authors of books reviewed.

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## *Affiliated State Associations, American Dietetic Association, Presidents, and Dates of Annual Meetings*

Alabama, Elizabeth Slater, Howard College, Birmingham

California, Katharine Brown, Moore White Clinic, Los Angeles; August 27–28, Ambassador Hotel, Los Angeles

Colorado, Rosella Hanfeld, Mercy Hospital, Denver

Connecticut, Virginia Murton, Grace Hospital, New Haven

District of Columbia, Eva Marks, Gallinger Municipal Hospital, Washington; Febr. 9, Kennedy-Warren Hotel, Washington, D. C.

Florida, Anna M. Tracy, Florida State College for Women, Tallahassee; April 5, St. Petersburg

Georgia, Gladys L. Stoddart, University Hospital, Augusta; May 10, Macon

Illinois, Beulah Hunzicker, Presbyterian Hospital, Chicago

Indiana, Verna A. McKinley, Methodist Hospital, Indianapolis

Iowa, Eunice Longworth, University Hospital, Iowa City; April 28–29

Kentucky, Florence Imlay, Experiment Station Bldg., Lexington

Louisiana, Mrs. Robert Polack, 1621 Peniston St., New Orleans; Dec. 14, 1936

Maryland, Marguerite Betts, Maryland College for Women, Lutherville

Massachusetts, Maniza Moore, Beth Israel Hospital, Boston; May 8

Michigan, Mable MacLachlan, University Hospital, Ann Arbor; April 15–16

Minnesota, Lucile R. Townsend, Glen Lake Sanitarium, Oak Terrace

Missouri, Mrs. Gladys Silkey, 1325 S. Grand Blvd., St. Louis

Montana, Evelyn Skreen, North Pacific Hospital, Missoula

Nebraska, Leta Linch, Lincoln General Hospital, Lincoln

New Jersey, Mrs. Asta Low Packard, 289 Grove Street, Somerville

New York, Emma L. Feeney, 223 Willoughby Avenue, Brooklyn; May 15, Hotel Astor, New York City

North Carolina, Margaret Fitzhugh, Watts Hospital, Durham

Ohio, Rachael Reed, Alms Hotel, Cincinnati; April 14–15

Oregon, Mrs. Edna B. Carl, Multnomah Hospital, Portland

Pennsylvania, Elizabeth L. Miller, Philadelphia General Hospital, Philadelphia

Rhode Island, Elsie Ewertz, Rhode Island Hospital, Providence

Tennessee, Fairfax T. Proudfit, 1105 Peabody Avenue, Memphis; Febr. 19–20

Texas, Mrs. Irene Pope Hardy, Rice Institute, Houston; April 2–3, Baker Hotel, Dallas, Texas.

Utah, Evelyn Bushey, L. D. S. Hospital, Salt Lake City

Virginia, Evelyn Neale, Retreat For The Sick, Richmond; May 15

Washington, Mary W. Northrop, King County Hospital, Seattle